

**COULSON**  
**ON THE**  
**HIP JOINT**







BY THE SAME AUTHOR.

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SECOND EDITION, ENLARGED AND IMPROVED,  
ON DEFORMITIES OF THE CHEST,  
WITH NUMEROUS PLATES.

“Some appropriate cases and plates illustrate this volume, which we recommend to our surgical brethren. Mr. Coulson seems to have devoted much attention to this subject, and has handled it well.”

*Medico-Chirurgical Review, October, 1836.*

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PREPARING FOR PUBLICATION,  
ON THE DISEASES OF THE BLADDER,  
WITH COLOURED PLATES.

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ERRATUM.

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DISEASE OF THE HIP-JOINT.





ON THE

DISEASE OF THE HIP-JOINT:

WITH

PLAIN AND COLOURED PLATES.

BY

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## ADVERTISEMENT.

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THE disease which forms the subject of the present work has engaged my attention for some years past. In 1831, two lectures on the subject, which I had delivered at the General Dispensary, were published in the Medical Gazette; and, since that period, I have had various opportunities of watching the disease in all its stages and forms \*.

It may be thought that, in my investigations, I have been too restricted, in confining them to the study and examination of the diseases attacking one joint only of the body: but, by

\* One of my sources of information (and perhaps it is the most extensive field in the world for the observation of scrofulous diseases generally) has been the Royal Sea Bathing Infirmary at Margate, an institution which contains two hundred in-patients at a time, and the out-patients of which are quite as numerous. All persons who apply for admission appear (if able) before the Medical Board in London, which meet a certain number of times in the season, both in the city and at the west end, for the purpose of passing the proper cases into the institution. During the five years that I have belonged to that Board, I have never absented myself from any one of its meetings in the city, and have also every season (with a single exception) visited the infirmary for the purpose of reporting on the state of the patients.

Ford, Falconer, Albers, Ficker, and others, the subject has hitherto been considered of sufficient importance to form a separate treatise; and, in those works which treat of the joints generally, the disease of the hip-joint has always formed the subject of separate and distinct consideration.

If the opinions, moreover, which I have been led to form are correct, their practical application will be most important in the remedies which have been resorted to in the treatment of the diseases of the joint in question; and, although the diseases of all the joints may be similar, the better course appears to be accurately to observe, at first, the diseases of particular joints, before we venture on generalising as to the diseases of all.

I am also emboldened in my present undertaking, because I am enabled to represent, what I have not found in any other work, the appearances observed on dissection in the earliest stage of the disease, opportunities for the observation of which but seldom occur in the most extensive practice. These appearances lead me to infer, that the disease commences most frequently (if not invariably) in the synovial membrane; that the round ligament is very early destroyed; and that the disease of the cartilage and bone, usually follows that of the membrane.

I have felt, in common with all others who have approached the subject, the difficulty of giving a name to the disease in question: it has been termed coxalgia, morbus coxarius, coxarthrocace, luxation spontanée ou consecutive du femur; but I

must content myself with adhering to the familiar term, "The Disease of the Hip;" describing, as accurately as I am able, the effects which this complaint produces.

I have not pretended, in this work, to examine and describe what was known by the ancients of the complaint under consideration: those who are curious on this point I must refer to Falconer's tract on the Ischias, which contains a very good summary of what the ancient authors have written on the disease; but I have carefully perused all the modern writers within my reach, and have gladly availed myself of their labours in the execution of the present work.

I cannot conclude without publicly expressing thanks to Mr. Liston for the assistance which he has rendered me in investigating the morbid changes which take place in this disease, and his liberality in permitting me to take drawings of some of his valuable specimens; as well as to Mr. Key for his great kindness in favouring me with the drawing from which the second plate is taken.

FREDERICK PLACE, OLD JEWRY;  
*October 8th, 1836.*



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## CHAPTER I.

### OF THE ANATOMY AND PHYSIOLOGY OF THE HIP-JOINT.

THE hip-joint is among the strongest of any in the body ; and this is necessary, because it has to support the whole weight in standing, walking, running, &c.

It is, in configuration, a ball and socket joint ; the globular head of the os femoris being received into the acetabulum or cotyloid cavity of the pelvis.

The head of the os femoris contains about two-thirds of a sphere ; and the largest part of it lies in the back part of the acetabulum.

The neck of the os femoris projects obliquely outwards and downwards from the head, and forms a very obtuse angle with its body, which thence descends to the knee. This projection outward of the neck, increases greatly the distance between the upper part of one thigh bone and that of its fellow on the opposite side.

The articulating surfaces of this joint are, as usual, covered by

cartilage in the greater part of their extent ; the cartilage being deficient only at the bottom and at the inferior anterior part of the acetabulum, and a little below the centre of the head of the os femoris. The former of these localities is a shallow cavity for the lodgment of a fatty vascular tissue, which was called by the older writers the synovial gland ; and the latter is caused by the attachment of the round ligament.

The cotyloid ligament is a fibro-cartilaginous ring, placed round and raising the edge of the acetabulum, completing its border where deficient, and serving the purpose of increasing its depth.

It is of a triangular shape, the base being attached to the bone, while its thin edge is free. Of its outer and inner surfaces, covered by the synovial membrane, the external is in contact with the capsular ligament, the internal, with the head of the os femoris.

Its fibres, instead of being continued all round, pass obliquely over the margin of the cavity, one extremity terminating on the outer, the other on the inner, surface.

At the notch in the edge of the acetabulum, the fibres of this fibro-cartilaginous ring, still crossing one another, are continued from side to side, so as to render the circumference complete ; and as some fibres are added here distinct from the fibro-cartilage, being both looser and broader, this part is usually named the transverse ligament.

Under this transverse portion, a space exists for the admission of the vessels of the joint.

The other connecting means, in this articulation, are a capsular, an accessory, and an inter-articular ligament.



The inter-articular ligament, round ligament, or ligamentum teres, is composed of three bundles or fasciculi of fibres, forming a thick and dense body, attached by one extremity, which is round, into the pit in the head of the os femoris, and by the other, which is broad and trifid, into the margins of the cotyloid notch, where its fibres are blended with the fibro-cartilaginous ring and the transverse ligament.

The capsular ligament, dense and firm in its texture, may be compared to a fibrous tube, attached by one extremity round the margin of the acetabulum, and by the other to the lower part of the neck of the os femoris, its direction being downward and outward, like that of the neck which it invests.

The superior circular edge of this tube is chiefly attached to the bone, within two or three lines of the cotyloid ligament, but, opposite the cotyloid notch, it is attached to the transverse ligament.

The inferior circular edge is attached anteriorly to the oblique line leading from one trochanter of the os femoris to the other; while superiorly and posteriorly it is fixed to the neck of the bone, within a quarter of an inch of the trochanteric fossa, and at nearly the same distance from the inter-trochanteric line.

The capsular ligament is most dense and firm towards its superior anterior part; while, inferiorly, its fibres are comparatively thin. The whole ligament, however, is strong, though necessarily loose, to allow of motion in every direction.

Connected with the capsular ligament, a strong bundle of fibres extends obliquely downwards over the anterior part of the joint. Being calculated to strengthen the capsular, it is sometimes called its accessory ligament; or, as one extremity of it is fixed to the

anterior inferior spinous process of the ileum, and the other to the anterior trochanteric line, it has been called the ileo-femoral ligament.

It is the strength of the capsular ligament at the anterior part, where it is covered by the accessory ligament, which supports us wherever the line of gravity of the trunk is behind the centre of the joint.

The synovial membrane of the joint lines the inner, and consequently contiguous, surfaces of all the parts which enter into its composition, lubricating and rendering them smooth.

Taking any point as that of commencement, we may say, that, from the margins of the articular surface of the os femoris, it may be traced downward upon the neck of that bone as far as the attachment, already described, of the capsular ligament; that thence ascending, it lines the inner surface of that ligament as far as its superior attachment; that there it turns inwards over the cotyloid ligament, and descends into the acetabulum, which it lines, and at the bottom of which it gives off some folds; that it thence passes outward along the round ligament, which it invests, and reaches the head of the os femoris; and that finally it invests that head as far as the border of its cartilage, where we described it as commencing. Hence it may be regarded as a bag to which all the other parts of the joint are external.

Beneath the synovial membrane the periosteum covers the neck of the femur, extending as far as the margin of the articular cartilage.

A large portion of the round head of the os femoris is received within the acetabulum; but some part even of it, and the whole of the neck of the bone, though placed within the capsular ligament, are situated on the outside of that depression.

The strength of the hip-joint is very great, depending on the depth of the acetabulum, the contraction of the cotyloid ligament, around the head of the os femoris, and the thickness and firmness of the capsular ligament. The joint is further strengthened by the muscles surrounding it, particularly by the psoas magnus, iliacus internus, gluteus minimus, and the external rotators.

The neck of the thigh-bone has already been described as situated externally and inferiorly to the head, and consequently internally and superiorly to the upper end of the bone, with which it generally makes an angle of about forty-eight or fifty degrees, though in some subjects the direction of the neck is almost transverse, or at right angles with the body of the bone.

The angle formed by the neck varies according to the sex and the period of life : thus it is less obtuse in the female than in the male, and in old age it is often quite a right angle, and the neck is both depressed and shortened.

The thigh-bone does not stand quite in a vertical direction ; but it is inclined a little obliquely, so that the upper ends of the two thigh-bones are at a greater distance from each other than the lower ones, while these, when we stand erect, are placed very near each other.

Owing to this obliquity of the bones, room is left between them, at the upper part, for the large and powerful muscles of adduction, as well as for the external organs of generation, and the outlets of the rectum and bladder.

The obliquity of the two thigh-bones, it has been rightly observed, allows walking to be performed in less room, straighter, and quicker ; for if they had extended perpendicularly downward from the pelvis, the knees being then at a greater distance from

each other, we should have been obliged to describe some part of a circle in taking every step, as we see done by very fat people, whose limbs are more asunder, and we should have been in greater danger of falling, because in raising one leg from the ground, our centre of gravity would have been far removed from the base of the other leg: but from the knees being near each other, a very slight effort adjusts them.

The muscles which move the hip-joint are very powerful, particularly the glutæi which carry the thigh backwards and outwards, the triceps which carries it inwards, and the psoas, iliacus, and pectineus, which, though they have not apparently so much strength, yet derive, from their situation, a power which enables them to bend the thigh with great effect. The quadratus, pyriformis, obturatores, and gemelli have also considerable power. Strong as are the muscles and ligaments which connect the thigh with the pelvis it appears probable, from the following experiments made by Weber \*, that it is owing to the influence of atmospheric pressure that the femur is kept against the acetabulum. Weber says:—

“I. A body was placed in such a position that the thigh freely hung down over the table. The muscles and ligaments were cut through and the thigh did not fall, nay, the articular surfaces remained in close apposition.

“II. I made a small hole in the acetabulum through which the air entered, and the thigh dropped as far as the capsular ligament would allow, though the muscles and ligaments were not cut through.

“III. I replaced in the acetabulum the thigh-bone, which had

\* Muller, Archiv. für Anatomie, Heft 1. 1836.



been quite separated from the body, and stopped the hole in the acetabulum with my finger: the bone was evidently retained in its situation, but fell immediately on the finger being withdrawn."

From the above experiments, which I have repeated, and the accuracy of which I can confirm as regards the most essential point, it is shown that the head of the bone, without any change in the condition of the ligaments, sank into the capsule as soon as air was admitted into the acetabulum above the head of the bone.

But to bring this about it is not essential that air should enter. It may be effected by the presence of a fluid secreted from the inflamed vessels, and in the proportion in which this fluid is secreted the head of the bone drops of itself, from its own weight, without there being any occasion for pressure being exerted above, or without the least resistance being offered by the ligaments.

The extent to which the head of the femur can be removed from the acetabulum, whether by means of the admission of air, the effusion of synovia, or the application of force, (the round ligament remaining entire), is rather more than an inch\*, and with respect to the application of force it is very difficult, nay, sometimes impossible, to produce this lengthening, unless the limb be rotated inwards at the time that the force is applied.

The hip-joint possesses very considerable freedom of motion, admitting of rotation, circumduction, radiation, progression, and all the intermediate movements.

Its rotatory motion depends on the extent to which the head

\* Vide Plate I, fig. 2.

of the bone can be turned inwards and outwards in the socket ; many strong muscles from the pelvis being fixed in the trochanters for this purpose. These, when the thigh is fixed, rotate the pelvis on the thigh. On this, our power of turning depends.

The thigh can also describe an extensive circle with its lower extremity, or move in all the radii of such circle. On this depends our power of balancing the body, when resting upon either of the feet.

The head of the bone can likewise be moved round its own axis, an action which throws the limb backward or forward. On this, progression depends.

The superficial absorbents of the hip-joint pass through the glands in the groin ; and the deep-seated ones go to those within the pelvis.

Its numerous blood-vessels are derived from the gluteal, internal pudic, sciatic, and obturator ; and it has branches from the circumflex which anastomose with the gluteal.

Its veins, generally speaking, take the course of the arteries.

The hip-joint is well supplied by nerves from the glutæal, the sciatic, the internal pudic, and posterior cutaneous, as well as by some smaller branches. In front is the crural nerve with its branches.

Nerves, it should also be observed, have not been traced into the cartilages ; and they appear to possess no sensibility.

In mentioning these, it should be observed, that all cartilages are probably vascular only in a sufficient degree to preserve life. When exposed they never granulate, nor will they unite with granulations from other parts.

All the parts of this joint have thus a peculiar character : they

are low both in regard to vascular action, and in the scale of sensibility. The value of this is evident, seeing that there is no rest to this joint, and that every motion of the body is accompanied by movement of the head of the os femoris in the acetabulum; for even the slightest motion, however remote, causes less or greater change in the centre of gravity of the body, and compels us to poise the trunk anew upon the hips. Were those parts more sensible, we should be perpetually lame. Happily, there is sufficient sensibility, to form an adequate guard against excessive motion of the joint, and little enough to permit the natural use of the limb—a nice adjustment of sensibility to function.

## CHAPTER II.

## OF THE CAUSE OF THE DISEASE OF THE HIP-JOINT.

MANY considerations prove that this is a constitutional disease, and that the affection of the hip-joint, and all its metastases, are the mere external demonstrations of a pathological condition in which extensive function, not a limited locality, are involved.

That it is primarily a disease of the vital or nutritive functions, is evident from this, that the mental or thinking functions are unaffected, and that the locomotive functions are involved only in proportion to the progress of the primary disease.

That, in the vital system, it is not absorption, nor circulation that are deranged, but mainly secretion, appears from this, that the secreting system seems to be extensively affected.

I.—Debility of constitution is remarkably favourable to the occurrence of this disease; and as to ulceration of the cartilage in particular, it has been well observed, “that it is a constitutional affection, is manifest from the circumstance that a disposition exists in some persons to take on this disease in several joints at the same time, without sufficient local exciting cause to bring it into action.” Accordingly, both hip-joints may be affected at the same time, of which I have seen instances; and two cases or more of the disease may occur in the same family, of which there is an example, at this time, in the infirmary.

II.—The liver, the largest secreting organ, seems almost universally to be affected in this disease.

III.—The mesenteric and inguinal glands, which collectively form an immense secreting organ, are very frequently involved.

IV.—It is generally, if not always, associated with scrofula, an undoubted disease of secretion.

V.—Dropsy not unfrequently occurs in the last stage of hip disease. A patient of the name of Ford, who died last year with that disease, had ascites; and another, admitted this season into the Infirmary, in the last stage of the complaint, was also dropsical. In a case of disease of both hip-joints, at present in the Infirmary, there is anasarcaous swelling of the whole lower extremities.

VI.—It is characterised by nothing so strikingly as the secretions that attend it, from the first puffing of the capsule, till those immense abscesses by which the hip is destroyed.

VII.—Its existence impedes no other secretion or excretion. The catamenia are usually regular during its continuance; and they continue so, unless the powers of life give way and death is likely to occur.

VIII.—It is impeded by greater secretions.—Hannah Coke, aged 30, a married woman, admitted into the Infirmary this year, says that she slipped down in the street, seven years ago, when pregnant; but suffered little or nothing from the fall until two months afterwards, immediately subsequent to her delivery. Pain then came on, extending from the hip to the knee. Two years passed before any matter showed itself; and, during this time, the pain was so severe that she was obliged to rest the feet on a board, and sit in a chair leaning over pillows. At the end of



two years, the pain began to diminish ; she became pregnant ; and she has been six times pregnant since that period. During pregnancy she is always better.

IX.—Every means of cure attended with any success, operates by promoting absorption, as iodine, &c.

Now, if this view be correct, what must be thought of the value of many of the topical remedies which we are in the habit of using on patients—I mean, issues, setons, moxæ, &c. &c.?

And how strange is it, that although the most industrious and persevering use of these severe inflictions has uniformly failed—although the disease generally runs its career in spite of them, we have failed to alter our method.

For myself, I must confess, that the signal failure of these means—the exacerbation of nearly every case in which they have been employed, is the very circumstance which has led me to these pathological reflections, and to that which seems to me a rational method of treatment.

These views, it will now be found, apply to, or are illustrated by, every circumstance connected with the various causes, or supposed causes, and conditions of the disease.

Under most of these circumstances, it will be observed, that not only are the secreting organs powerful and active, but the whole vital system is large ; while the locomotive system is proportionally feeble, and becomes a sacrifice to the excess or derangement of the former.

It is on these principles that this disease is more prevalent in some countries than in others ; as in England and Holland, of which the Saxon population is characterised by the magnitude of the trunk and of the vital organs, while the limbs and locomotive

system are small and feeble. In Holland, according to Camper, one person in twenty-eight, in his time, went lame.

The same principles apply to ages. In children, similar proportions and conditions of these systems prevail—the trunk is large; the limbs are short; and they are peculiarly subject to this complaint.

Hence it is that, even prior to birth, the organisation of the joints becomes deranged, and such changes are effected as to cause this form of disease.

Albers\* mentions three cases of a congenital affection of this kind. Morgagni† also observed the disease in an infant only a few months old. I have myself seen it at a very early period.

Mr. Anderson, surgeon of Myddelton Square, requested me, last year, to see his child, then only a month old, who had a small circumscribed swelling over the right hip-joint, produced by the collection of fluid, and evidently confined within the capsular ligament. The swelling gradually increased; ulceration of the capsular ligament took place; and a large abscess formed on the outer side of the thigh. This was opened, and a considerable quantity of matter discharged. The child experienced great suffering, and was much emaciated; but, by evacuating the matter as it collected, and by the application of warm fomentations and poultices to the part, the child ultimately recovered, and is now able to walk.

Camper‡ most frequently met with this disease in children a year and a half old. Albers§ observed it generally between the

\* Preisfrage, worin besteht eigentlich das Übel, das unter dem sogenannten freywilligen Hinken der Kinder bekannt ist? Beantwortet von J. A. Albers, Wien, 1807. S. 7.

† De Sedibus et Causis Morborum, Epist. lvi.

‡ Kleine Schriften, i. B, 11 S. s. 3.

§ S. 9.

third and twelfth year. Ford\* remarks that it usually attacks young persons from their infancy to the fourteenth year.

My own observations convince me that the disease occurs in children more frequently than in infants.

Now, it is evident, that independent of the great condition already pointed out, the disproportion of the vital and locomotive systems, most of the exciting causes, as scrofula, &c., exist in children. The bones also, and especially the articulations, are more vascular and contain less earthy matter than in adults; and the consequence is, that external violence and all other causes act more easily upon them, and injure the joint. Children also fall more frequently than adults, because the centre of gravity lies much higher in them. Finally, children are more excitable than adults, and are therefore predisposed to all kinds of complaints.

Instances, however, are not wanting where this disease appears at a more advanced age. Ficker† saw it in a countryman, thirty-eight years old; and Albers‡ saw it, in its worst form, in a man of forty-five. Palletta§ and Kraak|| relate cases where they saw the disease in men fifty years old.

I myself saw a patient of Mr. Winder's, surgeon of White Cross Street, last year, who was fifty years of age, and who, two or three weeks prior to the attack, had experienced a severe fall on the joint. I have seen very many cases in manhood and old age.

It is evidently the enfeeblement of the locomotive system by old age, that again renders it liable to this disease.

\* Observations on the Disease of the Hip-joint, by Edward Ford, 1st edit. p. 3.

† Preisfrage, worin besteht eigentlich das Übel, das unter dem sogenannten freywilligen Hinken der Kinder bekannt ist? Beantwortet von D. Wilhelem Anton Ficker de Wien, 1807. 4to. s. 92.

‡ S. 9.

§ Adversaria Chirurgica Prima, 4to. p. 28.

|| Richter's Chirurgische Bibliothek, Gottingen, 1805. B. 8, st. 3. S. 489.



It is on the same principles that females are perhaps most subject to this disease.

Van der Haar \*, accordingly, considers the delicate organisation of females, who approach near to children in this respect, the reason why one sees more lame persons among females than among males; and Morgagni explains the more frequent occurrence of the disease, in women, by the lodgment of the head of the thigh-bone more in the anterior part of the pelvis, in consequence of which the dislocation of the head of the bone can more easily take place. But as dislocation is now found to be less frequent than was formerly imagined, we have, in this, only his testimony to the frequency of the general disease in women.

This, however, is a point on which authors are not united. Albers † and Ficker ‡ entertain a different opinion; and, according to Rust's § experience, he has found males more frequently attacked by the disease than females.

It appears, however, to be agreed, that the disease terminates more favourably in males than females; and this is doubtless owing to the less predominance of the vital, and the greater power of the locomotive, system.

Owing to the relative condition of these two systems, it evidently is, that scrofulous individuals are very frequently attacked with this form of disease. There are, accordingly, few medical men who have not observed this disease in scrofulous children, as well as in adults, who have previously suffered from scrofula, and who still possess a scrofulous tendency.

\* Uitgeg. Gen. en Heelk. Mengelst, Amst. 1797. s. 15.

† S. 10.

‡ S. 35.

§ Arthrokakologie oder Über die Verrenkungen, durch innere Bedingung, &c. &c. von J. N. Rust. Wien. s. 24.

Hence it is that all kinds of scrofulous affections usually precede the hip disease, attacking one joint, and then another, until they settle in some one.

Mr. Lawrence, in his lectures, says, "affections of the joints that have their origin in scrofulous disease of the bones, very frequently appear in more than one part of the body, the cause consisting in a diseased state of the constitution. Sometimes you have a succession of affections appearing in different parts of the body, one after the other. I attended for several years, a young girl, the offspring of parents both of whom bore marks of a scrofulous constitution, and who, in fact, both died comparatively young, of tubercular phthisis. A sister of hers also died young, of a disease of the lungs. This young girl had, in the first instance, obvious marks of a very delicate constitution. She was subject, in the winter, to chilblains; and, for a considerable period, the circulation was obviously very feeble, as was shown by affections of the extremity of the body. She then had an affection of the bones of one foot, particularly of the os calcis, which was denuded, and communicated externally by an abscess, but never produced any severe effect on the constitution. It was subsequently observed, that she stooped very considerably; and, on examination, there was found to be a deviation from the straight line of the body, at the lower part of the back and upper part of the groin. There could be no doubt of scrofulous disease in the vertebræ: this was further evidenced by depression of the head and neck between the shoulders. The affection did not cause any pain; and the treatment of the case throughout, consisted merely of means calculated to strengthen the system; there being no counter-irritation or other treatment, as this would have been

too powerful for the debilitated state of the frame. The affection of the spine seemed to pass off. She then, however, had disease of the hip-joint, and this was more formidable than the other affections: it proceeded to the formation of abscesses in the neighbourhood of the hip; large formation of matter took place with repeated ulcerations; and she ultimately died hectic."

Ulceration of the cartilages happens more frequently in subjects partaking of a scrofulous habit of body, than in other constitutions. The disease is not to be identified with scrofula; but it appears particularly in persons subject to glandular affections of a scrofulous character. A slight accident, it has been observed, in a habit predisposed to this disease, may excite it to action, when it otherwise might have remained dormant, and it may do this at periods of life when scrofulous action does not usually appear.

Gout, rheumatism, and syphilis, all of them diseases of secretion, not unfrequently give rise to this disease.

Gonorrhœa, equally a disease of secretion, sometimes gives rise to it. A gentleman, whilst taking copaiba for the cure of a gonorrhœa, owing to the discharge from the urethra having suddenly stopped, was seized with a severe attack of the synovial membrane of the right hip-joint, from the effects of which he did not recover for some years.

After various other diseases of secretion, as small pox, measles, scarlet fever, various cutaneous affections, old sores too suddenly healed, it is acknowledged that this affection often comes on.

Master Lewis, 30, Addle Street, aged thirteen, at the age of eleven years, was seized with the small pox in the natural way. As soon as he rose from his bed, he felt great weakness in his right thigh, and pain in the hip and in the knee-joint under the patella;

the disease rapidly went through all its stages; and in July 1833 he was admitted into the infirmary. Since that time the hip has remained free from any return of the disease; but he was re-admitted this season on account of scrofulous disease in some other part.

On the same principles, suppressed lochial or menstrual discharges, and the stoppage of the lacteal secretion, bring on the disease.

In many of these cases, the course of the disease is very rapid; and if the proper measures be not promptly applied, the patient runs the greatest risk of suppuration and destruction of the joint.

Other causes appear to operate more immediately by injuring or debilitating the locomotive system, in persons of ill-constituted vital system, of excessive or deranged secretion.

Frequently, the disease is produced by external violence; or, more correctly, the tendency to it existing in the secreting system, is thus called into action.

It is observed that inflammation may be produced in the hip-joint by a violent strain; and that we can account for this, when we know that the muscles of the hip are attached to the fibrous capsule of the joint; so that there may be laceration of the tendons of these muscles, and of the fibrous capsule itself, a very probable cause of such inflammation.

On the same principle, after long walks, the disease of the hip-joint comes on.

Sir C. Bell\* observes, that, as in the acetabulum there is one

\* Medical Gazette, vol. xv. p. 699.



cavity within another, and a soft, fatty, vascular structure lodged in it, it is possible to propel the head of the bone directly and perpendicularly into the joint, so as to hurt the soft part, and to give rise to just so much local injury as will direct the constitutional disposition. On the fatty apparatus in the lesser cavity swelling, it becomes subject to the pressure and friction of the head of the femur, and this, he thinks, is often the commencement of diseased hip, rather than the twist, or bruise, which first calls the attention of the patient.

The left hip-joint, which is feebler than the right, is observed to be more frequently affected.

The continued application of cold to the part, a striking cause of enfeeblement, is a common cause of this disease. I attended a case this year, with Mr. Baker of the New York Road, in a child of six years old, who had experienced two attacks of the disease within nine months, each attack having been brought on by sitting on the cold steps.

“On this account \*,” says Falconer, “and, indeed, for other reasons, hip cases are more frequent among the lower ranks, and among labouring people, though the higher ranks are by no means exempt. It originates from damp beds, from working in water, or in wet grounds, or being casually much exposed to wet, as among washer-women and brewers’ servants, and others liable to have their clothes often wet. But lying on the damp ground, especially when the body is heated, is the most common, and most powerful, cause. Labourers, in harvest, are particularly liable to hazards of this kind, from their lying down, and frequently sleeping

\* On Ischias, p. 19.

under trees, and on the damp ground when the body is heated with labour and exhausted with fatigue, a dangerous indulgence, from which no caution, no entreaty can divert them, though they are generally as sensible of the danger, as those who suggest the warning not to incur it."

Thus I have endeavoured to simplify the view of the causes of this disease—country, age, sex, &c.; for it is evident, on examination, that all of these operate by enfeebling the most important joints of the body, in persons in whom the vital, and especially the secreting, system is deranged. Accident or external injury does so directly; the damper climates of England and Holland are obviously favourable to the vital, and unfavourable to the locomotive, system—hence great bodies and small limbs; childhood and womanhood are distinguished by an active vital, and feeble locomotive, system, &c. &c.; and if the locomotive system is enfeebled, it is not wonderful that its greatest joint should be so.

Previous writers on this subject have ventured to suppose, that, when this disease appears in scrofulous persons, it is at least a consequence of constitutional affection. I have endeavoured to show that it is always, not a consequence, but a mere external symptom of constitutional disease.

## CHAPTER III.

## OF THE PATHOLOGY OF THE HIP-JOINT.

To do justice to this important portion of the subject, I must lay before the reader, the doctrines of the ablest writers respecting it.

Albers says\*, “I was a long time uncertain whether really the bones, as Ford asserts, were the parts first affected in this complaint. But partly through the excellent work of M. Doerner †, and partly through the opportunity of opening a body in the first stage of the disease, I felt myself compelled to adopt that opinion. I found, for instance, an extensive destruction of the edge of the acetabulum, where the other parts of the hip-joint, viz., the cartilages, with the exception of a yellow spot, had suffered little or nothing. It is not improbable that the head of the bone is at first very frequently attacked with inflammation. As the consequence of this inflammation, the form and texture of the bones, particularly in young subjects, become changed, their cells are widened.”

Thus Albers adopts an opinion by the persuasion of M. Doerner, and the evidence of a single dissection. And yet the latter presents a yellow spot in the cartilage, and of course also in the

\* P. 12, op. cit.

† De gravioribus quibusdam Cartilaginum Mutationibus. Tubingæ, 1798.

synovial membrane, which may have been, and most probably was, the origin of the disease.

Rust\* says, "I believe that this disease has its origin in a morbid change of the head of the thigh-bone, and that the diseased appearances in the other parts of the joint are to be considered as the effect of the previously existing mischief of the head of the bone.

"The following are my reasons for this opinion :

"1.—The diseased change of the head of the bone manifests itself with pain and swelling. These symptoms are very apparent in disease of the shoulder, to which the disease of the hip is most nearly allied. This expansion of the head of the bone shows itself clearly in diseases of this kind in other joints, particularly the knee and elbow. In the hip-joint, however, these appearances cannot always be seen, even by an accurate observer, as the bony structure of the part is so well protected with a thick covering of muscle. Usually, the disease commences with a peculiar pain, which shows the head of the bone to be affected, and which is felt at the upper end of the bone (anteriorly), and is increased by any rough handling of the limb, and is aggravated in the evening and at nights with some degree of fever."

I wish to speak with every respect of my former preceptor, who stands deservedly high, not merely at Berlin, but throughout Germany; but here is a non sequitur which renders his argument good for nothing. "Pain," he says, "and swelling attend diseased change of the head of the bone:" but so do they attend diseased change of other parts of the joints. Well, therefore, might he add:—

\* Op. cit., p. 15.



“Camper, Ford, and Albers are, generally speaking, opposed to this opinion, and I must confess that I have seen cases of this disease without all these perceptible changes and painful symptoms.

“2.—Several remote causes which produce this disease add to the conviction that the original seat of the disease is not to be sought for in the bony structures merely, but especially in the articular extremities of the thigh-bone, because it accords with experience that gouty, scrofulous, rickety, and similar constitutions, which so frequently produce the morbus coxarius, as well as all other analogous affections, and evidently attack the organisation of the bones especially, attack only the articular extremities of the large bones and materially change their form and texture.”

But though these affections are analogous, they are not the same; and it is an obvious distinction between some of them and this disease of the hip-joint, that the former attack the bone, the latter the articulation.

“3.—Pathological investigations convince us of the correctness of this view. We frequently find both the head of the bone and the acetabulum affected with caries and nearly destroyed by it, and in these cases it is matter of the greatest difficulty to say what parts were first attacked.”

“Nevertheless cases have occurred to me which incontestibly prove that the disease originated in the head of the bone. For instance, I found, in a girl twelve years of age, who died during the first stage of coxalgia, of tubercular phthisis, the acetabulum quite sound, but the head of the bone expanded and already displaced.”

But the head of the bone could not be displaced, unless the synovial membrane and ligaments had been previously destroyed.

"I found," he says, "in a man who died of the last stage of the disease, the head of the bone completely dislocated, and in a carious state even below the great trochanter, although its articular surface was covered with a healthy layer of cartilage and scarcely anything unnatural in the acetabulum."

Now this something unnatural was probably the cause of the disease.

"In another case, where, during the first three months of the existence of the disease, no one had suspected caries, and where the impossibility of moving the limb was attributed to the severity of the pain, I found the head of the bone, which was covered by healthy cartilage and attached to the acetabulum by the usual ligaments, quite excavated by caries, and completely separated from the neck, and the upper end of the bone to below the smaller trochanter, destroyed by caries. In the acetabulum, on the contrary, excepting an unimportant roughness at the point of the attachment of the round ligament, nothing unusual was to be seen."

Thus all Rust's arguments to prove that the head of the bone was solely, or first affected, are so many concessions that the cartilage, the round ligament, or the synovial membrane was also affected, and that, to use his own words, "it was a matter of the greatest difficulty for him to say what parts were first attacked."

"Palletta \*," he observes, "mentions a case where the neck of the bone was destroyed and the head remained in the acetabulum; and observes, in reference to it, that the destroyed head had communicated to the cavity, at the point where the round ligament is attached, the same disease."

\* *Adversaria Chirurgica Prima*, 4to. p. 32.

But how could Palletta tell that this remarkable point, “the point where the round ligament is attached,” and which is now a second time acknowledged to be affected, by writers straining for an opposite view,—how could Palletta tell that, instead of the destroyed head communicating the disease to the cavity at “the point where the round ligament is attached,” it was not “the point where the round ligament is attached” that communicated the disease to the head of the bone?

On such false premises and imperfect reasoning is it that Rust ventures to conclude that the disease consists in an inflammation of the very vascular medullary membrane (*periosteum internum*—*tela medullaris Blumenbachii*), with a tendency to ulceration, and afterwards to a *caries profunda centralis*.

Boyer\*, who represents two principal varieties of this disease, from caries of the acetabulum and the head of the bone, is also of opinion that dislocation occurs from inflammation of the cartilages of the joints. Thus he brings us a little nearer the general origin of the disease.

Wickham† says, “Primary ulceration of the cartilage is characterised by strangely marked symptoms, which differ essentially from those which accompany diseased action in other parts of the joint. They are such as satisfactorily to lead to a detection of the actual seat of the disease.

“The pain is peculiar: it is continued, and of the pricking kind. Patients describe it by saying they feel as if an animal was gnawing at the part. This pain is deep in the articulation; but there is, for the most part, a remote or distant pain, a dull

\* *Leçons sur les Maladies des Os, &c.*, Paris, 1803.

† *A practical Treatise on Diseases of the Joints.* By W. J. Wickham, p. 49.

and continued aching down the lower part of the limb. This pain, although generally extending along the whole, now and then confines itself to one particular spot. Even then the pain is the same, resembling that of rheumatism. When the cartilage of the hip-joint is inflamed, the distant pain is particularly along the outer side of the thigh, knee, and leg; and it is most severe in the knee and ankle. In diseases of the cartilage of the shoulder, the pain extends along the outer side of the arm to the elbow, and onwards to the two last fingers. The distant pain is generally accompanied by a slight degree of numbness, and, in very irritable persons, by cramps or spasmodic twitchings of the large muscles of the limb. This is a great aggravation of the suffering, and renders it scarcely tolerable. The pain, both that which is in the joint, and that which is at a distance, is aggravated by pressure or forcing one bone against another; and it is curious to observe, when the pain of the joints has been in less degree than the remote pain, how decidedly pressure produces the distant pain: for example, I have repeatedly found pressure on the groin receive the great suffering which the patient has been affected with in the knee, in cases of disease of the cartilage of the hip."

This sufficiently shows that the cartilages are early affected; but earlier even than these symptoms are many times the stiffness, the weakness, and the sense of fatigue; and, consequently, that condition of the joint which causes them.

"Absence of swelling.—In the first stages of this disease, no swelling of the joint is observable. It is only when the inflammation has extended to the other textures that swelling occurs. The distinctions, then, by which disease of this structure is



to be known, are the peculiarity of pain, and the absence of swelling."

Here the early symptom of puffing around the joint, caused by accumulated synovia, is evidently overlooked.

"When the inflammation has proceeded to other parts, new symptoms arise, and are such as are attendant on disease commencing in the other textures. There is one symptom which may be perceived in the latter stages of ulceration of the cartilage, which cannot be discovered until absorption has gone to a considerable extent. I mean a grating sensation by friction of one bone against another. To detect this, it is necessary that a surgeon should be familiar with the peculiar sensation communicated, and should be able to distinguish it from that of fracture within the joint, or the crackling of certain states of bursal inflammation."

Here, after the destruction of the cartilages, the denuded bones are exposed to reciprocal action.

Advancing still nearer to the origin of the disease, Clossius\* attributes it to inflammation and swelling of the capsular ligament. Duverney, also, among the causes of spontaneous dislocation, enumerates swelling of the ligaments of the joints. Albers remarks that the swelling of this structure very much contributes to the dislocation of the joint.

Illustrating the fact that ligament is susceptible of inflammation, Mr. Mayo† says, "I cannot, indeed, say that I have seen, after death, what was identified as inflamed ligament; but in rheumatism, gout, and syphilis, it is impossible to doubt the existence

\* *Über die Krankheiten der Knochen.* Tübingen, 1798, p. 171.

† *Outlines of Pathology,* by Herbert Mayo, p. 80.



of inflammation of this tissue. In joints of which the other tissues have been the seat of inflammation and ulceration, the ligaments are found softened, and less opaque than natural.

“Syphilitic pains in the joints appear to have their seat in the ligaments, although the synovial membrane is liable to be involved in the inflammation.

“The ligaments are probably involved in rheumatic inflammation of joints, although the principal seat of articular rheumatism is synovial membrane.

“The ligaments are liable to be involved in gouty action, as is rendered likely by the seeming superficialness of the inflammation, and proved by the gouty deposit being found in their tissue. This deposit, indeed, is secreted everywhere: it is found in the synovial membrane, in the cartilage, and in the cancelli of the bones, as well as in ligaments; but its principal seat is in the latter, or rather in the cellular tissue on its outer surface.”

Mr. Tyrrell\* observes, that “the situation of the pain affecting the knee is not that which is the result of the disease of the knee-joint itself. The pain which has been observed in most of these cases, has been of the anterior and inner part of the articulation; and we find that denote the situation of the disease to be of the capsule of the hip-joint, for each patient complained of pain in the knee, when pressure was made about an inch to the outside of the femoral artery, over the situation of the capsule, but on all parts posterior to the trochanter major and tuberosity of the ischium, when pressure is made, you find they suffer but little.”

But it evidently is not by this means that pain in the syno-

\* St. Thomas's Hospital Reports, vol. i.

vial membrane can be distinguished from pain in the capsular ligament.

“The pain in these cases,” adds Mr. Tyrrell, “being aggravated at night, is indicative of disease affecting the fibrous tissue. You see this very clearly in the inflammation of the sclerotic coat of the eye. You can detect inflammation of this texture very readily, seeing that the surrounding structures are free from inflammatory action, it being alone the seat of disease; and when thus singly affected, we have symptoms, such as I have mentioned, indicative of inflammation of the fibrous capsule of the joint. The same is observable in inflammation of the pericardium, and the same in inflammation of all the fibrous tissues. The patient is, perhaps, well in the day, but towards morning or evening the pain is greatly aggravated. It is a kind of intermitting pain of a dull aching, but not lancinating or lacerating character, quite sufficient, however, to disturb the rest, and to produce exhaustion in that way.”

Mr. Key\* advances still nearer to that which I believe to be the primary seat of the disease. “The cases,” he says, “which it has fallen to my lot to examine, have induced me to believe that the ulceration of the cartilage is preceded by inflammation of the ligamentum teres. In the drawing of the early stage of this disease, which I lay before the Society, will be seen the usual morbid appearances that I have met with†. This joint was taken from a young female who, for six months prior to her death, had laboured under the usual symptoms of chronic inflammation of the hip-joint. The symptoms had partly yielded to the treatment

\* Medico-chirurgical Transactions, vol. xviii. p. 230.

† Vide Plate II. I am indebted to the kindness of Mr. Key for permission to use this drawing.

employed, when she was attacked with another disease of which she died. The ligamentum teres was found much thicker and more pulpy than usual from interstitial effusion; and the vessels upon its investing synovial membrane were distinct and large, without being filled with injection. At the root of the ligament, where it is attached to the head of the femur, a spot of ulceration in the cartilage is seen, commencing, as it does in other joints, by an extension of the vessels in form of a membrane from the root of the vascular ligament. The same process was also taking place on the acetabulum, where the ligamentum teres is attached.

“ I cannot undertake to say that the hip-disease shall, in every instance, present these morbid appearances, or that cases do not occur in which ulceration exists as a primary disease, without any affection of the round ligament or synovial membrane. Sir B. Brodie’s assertion, that it does exist as a primary disease, coming from so excellent a pathologist, is sufficient to substantiate the fact. But observation of this disease in its different stages, and of the mode in which the disease is brought into action, together with the post-mortem appearances, affords strong proof, that at least, in many instances, the action is propagated from the ligament to the cartilage, and that ulceration of the latter is consequent upon inflammation of the former. The beginning of the affection is frequently to be traced to a fall, by which the legs have been forcibly separated, and the ligamentum teres stretched. In some cases, the injury has been so considerable, as to occasion the patient to rest the limb for some days, on account of the severity of the pain. This to a certain extent subsides, and the inflammation that remains assumes the chronic form. If the patient’s health is good, he

recovers with only a slight temporary weakness in the joint : in the more feeble habit, with a tendency to strumous action, the disease gradually passes into the ulcerative form.

“ Sometimes, from the tender age of the child, no cause can be assigned for the disease : perhaps, in some instances it may have a purely constitutional origin.”

How admirably do these observations support the view which I have taken, namely, that the disease is always constitutional, and that, locally, it first affects the synovial membrane !

“ The motions of the joint, that give the patient most pain, are strongly indicative of the seat of the affection, in the earliest stage, before the soft parts could well be affected, if the disease commenced in the cartilage. Eversion of the thigh, and abduction of the limb from the other, produce the greatest degree of suffering to the patient, while he can bear the joint to be flexed and to be slightly inverted, without complaining. A similar indication of the ligamentum teres being inflamed, is the pain sometimes expressed on pressing the head of the femur against the acetabulum : in its healthy state, the ligament, being lodged in the hollow of the acetabulum, receives but little pressure, but when it is swelled by inflammation, the cavity of the joint affords it less protection, and when pressure is made by forcing the head of the femur upwards, the ligament is compressed, and usually produces some degree of pain.”

“ The circumstance, too, of the ligamentum teres being destroyed by ulceration when the head of the bone and acetabulum are only partially ulcerated, may be considered as presumptive proof of it being very early engaged in the disease. There are few cases of



post-mortem inspection of the hip-joint in an advanced stage of disease, in which the ligamentum teres is not found destroyed."

The cause of the round ligament being thus destroyed before others, is worthy of serious consideration. It differs from the other ligaments in two important circumstances, its conducting the vessels to the more vascular synovial membrane, and its being closely invested, from end to end, by that vascular expansion, which is obviously most liable to diseased action. To that circumstance, therefore, we are compelled to impute its early suffering in this disease.

The true local cause of the disease (conforming perfectly to the doctrine I have ventured to adduce, namely, that the disease is really a constitutional one,—that it is a disease of secretion,—and that it originates in the part of the joint most vascular and most liable to disease) is pointed out by Camper and Van Swieten, who attribute its origin to an unusual collection of synovia.

Petit is also of opinion that, in addition to relaxation of the ligaments of the joint, paralysis of the muscles and swelling of the head of the bone, it may arise from a collection of synovia.

That the synovial membrane of the hip-joint, and not the cartilage, is often primarily engaged in this disease, we may infer from one of the first symptoms which marks its commencement, a fulness of the groin, depending in all probability upon the increased secretion into the joint, similar to that which we know takes place in synovitis of the knee.

"No part of the body," says Brodie, "is much more frequently diseased than the synovial membranes.

"I have known many cases in which there was extensive destruc-

tion of the cartilages of a joint by ulceration, manifestly arising from neglected inflammation of the synovial membrane. Inflammation of the synovial membrane occasionally terminates in suppuration, without having induced ulceration of either the soft or the hard textures of the joints.

“When inflammation attacks the synovial membrane of the hip, there is an evident fulness of the groin, and, in some instances, of the nates also. The pain is aggravated when the patient stands erect, and allows the limb to hang, without the foot resting on the ground\*.

“When an abscess has formed in a joint, an ulcerated opening takes place in the synovial membrane, through which the matter is discharged.

“There are some diseases which consist simply in a morbid action; there are others, in which the morbid action produces a morbid change of anatomical structure. The morbid action evidently originates in the synovial membrane, which loses its natural organisation, and becomes converted into a pulpy substance, of a light brown, and sometimes of a reddish-brown, colour, intersected by white membranous lines. As the disease advances, it involves all the parts of which the joint is composed, producing ulceration of the cartilages, caries of the bones, wasting of the ligaments, and abscesses in different places.”

Cruveilhier† says, “Il est résulté de mon observation que, dix-neuf

\* “It is also increased by motion, but not by pressing the articulating surfaces against each other, so that it does not prevent the weight of the body being borne by the affected limb. The pain is often very severe, yet it does not amount to that excruciating sensation which exhausts the powers and spirits of the patient in whom the cartilages of the hip are ulcerated.”

† Dictionnaire de Médecine et de Chirurgie pratiques, Tom. troisième, art. Articulations.



fois sur vingt, ces maladies articulaires ne sont autre chose que des inflammations chroniques des synoviales ; que dix-neuf fois sur vingt lors même que tous les tissus fibreux et cellulaires qui entourent une articulation ont été envahis avec la synoviale, c'est la maladie de la synoviale qui a précédé et qui domine."

Few stronger confirmations than these can be given of the truth of the doctrine I have proposed.

"L'usure des cartilages est un des effets les plus graves de l'inflammation des synoviales : cet effet persiste indépendamment de la cause qui l'a produit, et alors les malades éprouvent une rigidité singulière dans l'articulation ; ils sentent, ils entendent des craquemens dans l'exercice des mouvemens."

In favour of all these views is the disease's being one of secretion, as already shown ; and hence the probability of its origin in a secreting organ.

Equally in favour of these views is the puffing around the joint, and the slight protrusion of the trochanter.

Not less in favour of them is that adduction of the limb by which the head of the bone is thrown outward and upward, or carried directly away from the seat of the vessels, the so-called synovial gland, and the contact of the synovial membrane.

So, also, all the most successful methods of treatment.

A case not less decisive recently occurred in my own practice :—

Caroline Long, æt. twenty months, of a scrofulous constitution, was brought to me, in April 1836, for an affection of the right hip-joint. There was wasting of the nates and of the whole extremity, and apparent lengthening of the limb.

As the child was then cutting its teeth, I was inclined to regard the affection as that which occurs in children during this process.

But, very shortly, I found that disease was going on in the joint : the trochanter was thrown more forward ; the nates were more projecting ; the leg was bent on the thigh ; and the thigh, on the pelvis ; and the child rested on the opposite side, and appeared in great pain, not allowing the joint to be in any way moved.

Blisters were applied to the joint ; warm bathing, which at first very much relieved the child, was tried ; and opium was administered to allay the pain.

The child went on in this state of suffering until the 13th of last June, when it was seized with convulsions, and it died on the following morning.

In the evening, I examined the body with Mr. King of Cateaton Street, under whose care the child had latterly been.

On measuring both limbs, we found the right a little shorter than the left. The muscles in the posterior region of the joint were much attenuated as compared with those on the opposite side ; but the psoas and iliacus internus did not appear altered.

On opening the capsular ligament, some thick yellowish matter escaped, resembling, in consistence, the cortical substance of the brain. The quantity amounted to half a table spoonful. The round ligament was completely destroyed, and the synovial membrane inflamed.

There was absorption of some portion of the cartilage covering the head of the femur, and of the cartilaginous rim of the acetabulum ; but, on making a section of the femur, the bone was found healthy, and the cartilage no further diseased\*.

The left hip-joint was quite healthy.

\* Vide Plate III.

The peritoneum was inflamed throughout its whole extent, and studded with small tubercles. The mesenteric glands, as well as the pelvic and bronchial, were enlarged and vascular, but not in a state of suppuration. The viscera were not diseased.

Plate III. illustrates the disease in the joint; and the diseased parts are now in my possession.

I may mention another case which confirms the view I have taken of the origin of the disease.—With my friend Dr. Lambe, I had some time ago an opportunity of examining the body of a child six years old, who died of an inflammatory affection of the lungs, but who, at the time this illness commenced, was labouring under incipient disease of the right hip-joint. The synovial membrane was inflamed, particularly that part investing the round ligament; the red vessels extended along the ligament over the cartilage of the head of the femur; and I know of nothing with which I can so well compare the appearance of the cartilage as the conjunctival membrane of the eye in a state of incipient inflammation.

## CHAPTER IV.

## OF THE MORBID ANATOMY OF THE HIP-JOINT, IN THIS DISEASE.

IN disease of the hip, the parts entering into the formation of the joint undergo, as might be expected, very considerable changes. The nature of these changes depends, in a great measure, on the extent of the disease, and on the constitution of the person attacked by it. But the appearances met with, will be found to vary more in circumstances marking the extent of the disease, than any difference in its nature.

Ulcerations of the parts composing it, may be carried on without producing any marked symptom of their being scrofulous, or without the person in whom they occur having been predisposed to that disease; but more generally the disease has a scrofulous character, both in the constitutional symptoms it produces, and in its local effects.

The synovial membrane in particular becomes inflamed and thickened, and occasionally is perforated by small openings. After a preternatural secretion of synovia, it is found to be lined with coagulable lymph, adhering to it in different degrees of thickness; and that substance also lines the acetabulum, and is often spread over the head and neck of the femur. At other times the synovial membrane secretes the thick purulent matter, which was found in the case of Caroline Long, or is converted into the gristly substance



mentioned by Brodie. In the progress of the disease, it is often completely destroyed.

The ligamentum teres also ulcerates, and in time is completely absorbed.

A striking illustration of these facts is stated by Palletta\*, who says, “*Militem, qui ultra annum lecto se continuit, et ob cariem coxitis, obiit, secuimus 2, Aug. 1817. Patefacto articulo, inventum est cotyle cartilagine destitutum, carie hinc inde abrasum, præcipue foveola, in qua teres ligamentum immittitur, cujus nullum vestigium erat.*” The capsular ligament is sometimes loose and spongy, at others thickened, and perforated by several fistulous openings communicating with the joint. Mr. Liston has, in his museum, a very fine specimen of this thickened state of the capsular ligament. In the advanced stage of the disease, little or no vestige of the ligament is left.

The articular cartilages are abraded in some parts, and absorbed in others. Sometimes that of the acetabulum is first affected; sometimes that of the femur; and, sometimes, ulceration begins in both at the same time. As the disease proceeds, these cartilages are completely destroyed, and occasionally replaced by an ivory or almost vitreous deposit. Loose floating portions of cartilage are occasionally found in the joint after death. Cruveilhier† relates a case in which he found fifteen loose fragments of cartilage in the hip-joint. The cotyloid and transverse ligaments are generally destroyed.

The socket is widened and rendered shallow by this process; the bare surfaces of the bone become carious and ulcerated; and

\* *Exercitationes Pathologicæ*, p. 57.

† *Archives Générales de Médecine*, t. 4.

the head and even the neck of the femur is lessened, so that the parts composing the joints are no longer fitted to each other. In scrofulous inflammation of bone, the earthy matter becomes absorbed, and the bone consequently softened, whilst the cancelli are filled with a yellow caseous matter, or a transparent yellow fluid.

But the striking feature in this kind of inflammation is the absence of all secretion or deposit of bone; whereas, in simple inflammation, uninfluenced by the scrofulous diathesis, particularly when it becomes of a chronic character, bone is secreted in abundance. Bony ankylosis in a scrofulous subject is very rare, and some pathologists believe that it never occurs. The head of the bone is frequently changed in structure; and, in scrofulous subjects, it is much softened.

Mr. Lloyd \* says, "It often happens, that the whole of the cancelli are nearly filled with this cheesy matter, or that several of the cellular partitions being broken down, a large mass of it is collected at one spot, while the rest of the cancelli remain entire, and are filled partly with the yellow fluid; while many of them may appear altogether empty, not even containing any of their natural secretion. Sometimes we find that only a part of the cancellous structure of the head of the bone has undergone this change: indeed I am inclined to believe that it often begins in the centre, as I have found the deposition of the new matter is very frequently greater there, and the exterior of the bone commonly remains hard, as has been observed by Wiseman (p. 252); while the interior is completely deprived of its earth, and so soft as to be readily cut

\* On the Nature and Treatment of Scrofula, p. 120.



with a knife. Sometimes, however, only one side of the bone will be affected, and the whole of the deposit will be found there. It occasionally happens, that all the bones of a joint are affected in this way; but it often occurs that only one of them shall undergo this change. Sometimes, too, the cheesy matter pervades the cancelli of the whole bone, and is deposited in innumerable portions of the most minute size."

The consequences of this disease are often complicated, owing to the long course which the matter must take to reach the surface of the body; so that fistulous passages and large abscesses not unusually form communications with other structures, and lead, from the remains of the joint, to various parts of the surface of the body.

In Mr. Liston's collection, there is a specimen showing extensive destruction of the acetabulum, head and neck of the femur, with several sinuses leading from the joint; and one in particular, of large size, leading towards the rectum through the foramen ovale. There, is also the rectum corresponding to this preparation, with a rounded aperture sufficient to admit the point of the little finger about an inch and a half above the anus.

The head of the bone is sometimes displaced, and, by the action of the muscles, drawn upwards and lodged on the dorsum of the ileum\*. In rarer cases, the upper extremity of the femur, after being dislodged, has been drawn downwards and inwards, on the foramen ovale. In still rarer cases, the head of the femur is drawn forward, and rests on the pubes; the knee and toes being turned outwards.

\* Vide Plate VI.

In the last stages of the disease, the acetabulum is sometimes filled up by a whitish organised substance varying in hardness; all distinction between synovial membrane, capsular ligament, cellular membrane, and this new substance, being lost; and the whole being converted into a similar mass. Even the muscles are altered in structure.

The bones of the pelvis often suffer very considerably in this disease. In some cases, the os innominatum is more extensively affected by caries than the thigh-bone itself\*.

In those cases which have been examined, in which the curative process has begun,—the ligaments are found, in some instances, thicker than usual, with a soft substance, which seems to have been first thrown out as coagulable lymph, but now forms a solid and organised mass, adhering to a greater or lesser portion of their internal surface; and in cases where the articular cartilages have been absorbed, this substance is found to pass between the surfaces, which when covered with cartilage moved on each other, and now to unite them by adhering to, and receiving vessels from, each; thus forming the connecting medium through which ankylosis takes place. If the capsular ligament be not destroyed, the carious head or neck of the bone is drawn towards the acetabulum, and dislocation usually does not take place. Ankylosis of the head of the bone in this situation takes place; as plate V. shows. At other times, the head of the femur is dislocated; and ankylosis takes place between the femur and dorsum of the ilium, or a new joint may be formed here, and a certain degree of motion be allowed. When the head of the bone is

\* Vide Plate IV.

dislocated, ossific deposit is thrown out in the acetabulum, which in time becomes almost obliterated.

Necrosis of the femur may extend to the neck of the bone and produce disease of the joint. In such a case, however, the proper articulating surface is never destroyed, for the cartilage which belongs to the original bone still remains in its place, and the capsular ligament is nowhere injured or opened. "I never have known," says Russell\*, "an instance in which the articular cartilage came away in a case of necrosis. It seems, however, to undergo a change, in order to accommodate itself to the enlargement which takes place at the head of the new bone; for that piece of cartilage, which tips the head of the new bone, is always considerably broader than the surface of the original cartilage, and consequently must have increased in size, in proportion to the greater extent which it had to cover."

Albers and Rust have described the change which the bones of the pelvis undergo in their form and situation. The pelvis, in those who have for a long time gone lame, is pushed upwards; and the sacrum is flat and straight: in a few cases, however, it is more curved than in the natural state. The coccyx is bent strongly forwards, and the connection of the last lumbar vertebra with the sacrum forms a right angle. The ilium of the affected side stands higher, and has, in general, a perpendicular direction, and more of a triangular form. The external surface is smooth, whilst the fossa appears more hollowed than usual. This hollowing probably depends on the action of the iliacus internus, which is greater than that of the glutæi. The horizontal portion of the pubes often

\* On Necrosis, p. 77.

seems lengthened, and lower than in the natural state, and the ischium is usually drawn outwards and forwards. The perpendicular direction of the foramen ovale is changed more to a horizontal one, and the opening assumes more of a triangular form, its base being turned to the acetabulum. In consequence of the changed situation of the bones of the pelvis, its different diameters undergo an essential deviation from the natural state. The superior apertures of the pelvis are commonly somewhat oblique; and the pelvis is broader on the affected side from before backwards.

Dissections of those persons who have walked lame for a long time in consequence of this complaint, show, that the muscles have been exercised in a different direction from the natural one. Some are relaxed, particularly the three glutæi, which are quite drawn together and shortened. In addition, the anterior part of the glutæus medius and minimus is drawn backwards, and the back part is pressed, in an almost straight direction, on the trochanter. Other muscles are drawn forward with the dislocated limb, as the obturators. The gemini, the pyriformis, and quadratus, become shortened, as the femur is drawn nearer to their attachment. Other muscles, from similar causes, are drawn inwards; and this is the case with the psoas and iliacus internus. The triceps, gracilis, and pectinæus are drawn outwards. Under the tendon of the rectus femoris, which is drawn backwards, the head of the femur ascends. Sometimes several muscles are found entirely hardened by the preceding suppuration, joined together, and converted into one tendinous mass. The sciatic and crural nerves are found on the stretch or pushed to one side. Sir B. Brodie mentions a case in which he found two enlarged lymphatic glands, each



of the size of a walnut, immediately below the crural arch, on the fore part of the joint; and these lay in contact with, and immediately behind, two branches of the nerves, so as to keep the latter on the stretch, like the strings passing over the bridge of a violin. The hip, therefore, of the affected side is much less prominent, or rather, is much flatter than the other, and is often intersected by sinuses discharging very fetid purulent matter.

I have given, in the preceding description, an account of the morbid changes which the parts entering into the formation of the joint undergo in this disease; but it must never be forgotten that the diseased action is not confined to the joint, that the whole glandular system is often affected, especially the inguinal, pelvic, and mesenteric glands, and the liver. The lungs are also frequently diseased, as many of the patients die consumptive.



## CHAPTER V.

## OF THE SYMPTOMS OF THE DISEASE OF THE HIP-JOINT.

THE symptoms of this disease may be divided into three stages.

THE FIRST STAGE commences with a stiffness of the limb, which the patient feels most of a morning. A difficulty of stooping forward succeeds, so that the patient may feel uneasiness when drawing on his stockings; and, in order to stoop, he may be obliged to bend the leg backwards, and place the hand behind the body. A sense of fatigue and weakness, after the slightest exertion, follows. Occasional darting pains are felt down the thigh; and, generally, a peculiar pain at the knee succeeds: sometimes there is pain in the hip itself, but frequently it is altogether wanting.

The pain in the knee is often the only symptom which at first attracts the attention of the patient, and induces him to apply to a surgeon. This pain is generally more severe during the night, and sometimes deprives the patient of rest, or awakes him several times out of sleep. Not unfrequently, at this period, these pains occur periodically.

The surgeon, on examination, finds the knee in most cases sound, although not invariably so. Ford says that the knee, after the most minute examination, will be found in a perfectly sound state; but this is too general an assertion. It sometimes happens that the knee is affected at the same time with the hip; and

even when the knee is not diseased, it is often puffy and swollen.

If, however, the surgeon press in the neighbourhood of the hip-joint, either behind the trochanter major or in front, where the psoas magnus and iliacus internus pass over the articulation; or if he grasp the foot, and rotate the head of the femur against the acetabulum; he soon ascertains that the hip is the seat of the disease.

To determine this, when the patient is laid horizontally on a flat hard surface, as a table or floor, the surgeon grasps the foot of the affected limb in his hand, and, placing the other hand on the knee, he rotates the head of the femur against the acetabulum. The pain which the patient experiences from this particular mode of examination, apprises him of the mischief going on in the joint. Pressure in front of the joint, and just behind the trochanter, confirms him in his opinion of the seat of the disease.

But whatever pain exists, is, by the patient, referred to the knee rather than to the joint actually affected. This pain of the knee almost invariably attends the early stages of disease of the hip, and different explanations have been offered to account for its occurrence.

“As to the situation of the pain,” says Mr. Tyrrell, “that is a point of importance. The fibrous capsule of the hip-joint is very extensive. We often find organic thickening taking place at one part of the ligament, while the other parts remain unaffected; and the pain of the anterior part of the joint denotes that the morbid affection is confined to that particular part. This is indicated by the sympathetic pain which affects the knee; and it is

upon the anterior and inner part of the knee that the patient feels the pain. You can account for that by recollecting the anatomical structure, and the distribution of nerves to those parts, —the division of the anterior crural nerve, and the saphenus major and minor, one of which is continued to the foot, and the other is lost above the knee, on the inner and interior side.

“Viewing the disease only as local,” he adds, “it is of much importance to attend to this, because the closer in contact with the affected parts that the remedies can be applied, the more likely are they to be of service. Frequently you will find that there has been an indiscriminate use of applications, or abstraction of blood, over the posterior part of the hip-joint. You will generally find that blisters or moxæ are applied there, which are not likely to do one sixth of the degree of good that they will do if applied to the groin, near the seat of the disease. It becomes, therefore, of much importance to ascertain accurately the symptoms, and whence they proceed.”

It is generally thus believed that the pain is conveyed by the branches of the anterior crural nerve, down the thigh to the knee.

Sir C. Bell, however, conceives that it is communicated by means of the obturator nerve. “The obturator nerve,” he says, “passes through the thyroid foramen, down to the hip-joint, and after supplying the muscles is distributed upon the inner part of the knee. The nerve in its course is thus involved in the inflammation which affects the hip-joint, and the pain is referred to its extreme cutaneous branches, at a part distant from the seat of the disease.”

This explanation is not, of itself, sufficient to account for the

symptoms, for we very commonly find the pain extending along the middle and even the outer part of the thigh, whilst the obturator nerve is distributed to the muscles on the inner side of the limb.

Mr. Tyrrell observes, that “as soon as the capsular ligament becomes affected, we have sympathetic affection of the knee, and sometimes sympathetic affection of the muscles at a great distance from the part which is the immediate seat of disease.” And it has struck me that, from the intimate connection of the long head of the rectus femoris with the outer edge of the acetabulum, and with the capsular ligament, this muscle may take on the inflammatory action, and the pain in this way be conveyed down the limb to the thigh. We find something analogous to this in diseases of the shoulder-joint: the pain in these cases extends down the front of the arm to the insertion of the biceps, and the long head of the biceps is in intimate connection with the capsular ligament of the joint, and the glenoid ligament of the scapula.

At this period, no deviation from the natural condition of the limb or of the spine is discoverable. The spine is straight; and the affected limb is of the same length as the other.

The nates are not altered in form, unless when a slight fulness is perceptible behind the trochanter and in front of the joint, owing to an accumulation of synovia within the capsular ligament.

In this stage, there is a tendency to incline the foot a little inwards or outwards, doubtless according to the part of the synovial membrane which may be affected; and there is also a tendency in walking to carry the limb straight, as if there were no joint in the knee. The latter is a very remarkable circumstance, and worthy of serious reflection.



In some persons, there is also a difficulty of separating the legs sideways; and in others, though more rarely, a difficulty in bringing the legs together. These, likewise, are most important indications.

The weakness and stiffness which the patient at first experiences, are soon succeeded by a limping gait, or a slight degree of lameness.

All these symptoms (and even the pain in the knee) are at first so slight, as to be entirely neglected, even by adults; and in young children, who have not the power of communicating their sensations, limping or lameness is the first symptom which attracts the notice of the parent, and, when observed, it is too often referred to some other cause than that from which it proceeds.

It thus happens that the disease may exist for some time, both in adults and children, without being discovered.

How long it may remain in this early stage, is, of course, uncertain; depending on the constitution and age of the individual, as well as a variety of other causes. The usual time, however, is from one to six months.

In perfect conformity with the doctrine I have endeavoured to establish, as to the nature of this disease, Mr. Lloyd says, "It is not uncommon for the glands of the groin to take on the scrofulous action, to enlarge and suppurate, as one of the first symptoms of the joint of the hip being diseased. I have twice known them, under these circumstances, to enlarge enormously, and form large abscesses, having no communication with the cavity of the joint, nor with diseased vertebræ; previously to which there has been no lameness nor other evidence of the joint being affected."

The general health is frequently unaffected in this stage; though



sometimes it is otherwise, there being weakness and fatigue on the slightest motion, a delicate look, and towards evening a slight accession of fever.

If the complaint occurs in a scrofulous subject, the inflammatory action will be very much modified by this state of the constitution. It is known, however, that in this and many scrofulous diseases, the inflammatory diathesis is indolent during the first attack, and is not discoverable by the usual symptoms of acute pain and fever. On the contrary, the patient frequently appears to be in a low, enervated state, with a quick small pulse and a variety of symptoms, indicating a depressed state of the vital powers.

After the disease has been arrested in this stage, a limping gait sometimes remains; and, after a long walk or great exertion, this limping is increased.

In many persons with disease of the hip, there is that state of the chest which I have described, the pigeon breast\*; and this state is aggravated by the want of proper exercise and the state of the constitutional and local disease. I saw a child very recently, with disease of the hip in the third stage, who had this state of the chest.

If the complaint be not arrested at this period, it goes into the SECOND STAGE, which is marked by symptoms too evident to be mistaken or overlooked.

The nates of the affected side are flatter, the folds of the skin considerably deeper; the affected limb seems to be, and generally

\* Deformities of the Chest, p. 3.

is, in a slight degree, longer than the sound one ; the trochanter major is directed more outwards than in the natural state ; and the whole limb, particularly the thigh, is thinner and more flabby.

The surgeon may convince himself of these changes, by submitting his patient to an accurate examination.

The flattening of the affected buttock occurs in all patients. If, consequently, the back be viewed, from the loins to below the knees, this flattening is, by the contrast, rendered obvious upon the affected side ; the marked division between the hip and the thigh being lost.

It is evidently the condition of the glutæi which causes this flattening of the hip in the erect position ; the total inactivity of those muscles causing them to waste. On the sound side, the proper muscular contraction takes place.

The muscles of the leg become also affected, and its power is greatly diminished.

The real or apparent lengthening of the limb, however, in this stage of the disease, is the most prominent symptom.

To render this evident, it is advisable to place the patient in the horizontal position, on a flat hard surface, as a table or floor, and not on any soft yielding substance, as a bed, sofa, &c., because the nature of these will prevent the seeing accurately the deviation from the natural form of the parts. When the person is in this position, we, in most cases, perceive the trochanter, the patella, and malleolus, lower than in the sound limb.

After having examined the patient in the horizontal position, he is directed to stand up, and we see that he does not rest equally on both feet. The sound limb is extended, whilst the affected one is bent ; the knee being lower than that of the oppo-

site side, and the foot generally everted, though it is occasionally turned inwards.

Now, there is scarcely any point connected with disease of the hip which has given rise to more discussion than the explanation of this symptom; some contending that there is no real lengthening, whilst others assert that the limb is actually longer than the other.

Those who contend for the latter opinion, conceive that the limb is actually lengthened, either by the expansion of the head of the bone, or by an increased secretion of the synovial fluid, or by matter pushing the limb downwards.

Those who contend that there is no real lengthening, say, that "the apparent elongation is produced by the position of the pelvis being altered, in such a way that the crista of one ileum is visibly depressed below the level of the other. It is easy to understand how this effect is produced, by observing the position in which the patient places himself when he stands erect. He supports the weight of his body on the sound limb, the hip and the knee of which are, in consequence, maintained in the state of extension; at the same time the opposite limb is inclined forward, and the foot on the side of the disease is placed on the ground, considerably anterior to the other, not for the purpose of supporting the superincumbent weight, but for that of keeping the person steady, and preserving the equilibrium. Of course, this cannot be done without the pelvis on the same side being depressed. The inclination of the pelvis is necessarily attended with a lateral curvature of the spine; and hence it happens that one shoulder is higher than the other, and that the whole figure is in some degree distorted."

On this subject, Mr. Wickham says, "In no one instance have I found the variation of the angle which the pelvis naturally forms with the spine as the effect of disease in the articulation of the hip; and, in my opinion, it is unreasonable, upon common principles, and with the knowledge which we possess of the ordinary changes of the spine under disease, to expect that the distortion of the spine and pelvis should be an attendant on the early periods of disease in a part so remote from, and otherwise unconnected as the hip is, with the spine. If it is borne in mind how suddenly, in some cases, is the appearance of elongation, and again, how sudden is the removal of that symptom, it will be difficult to suppose that, at one time the pelvis shall so suddenly descend, and again as suddenly right itself."—Here the writer evidently mistakes the variation in the position of the pelvis, which is inseparable from every varying position of the limb, for some organic change, which is neither supposed nor asserted.

"The deception is, I conceive, produced by the position into which the limb is thrown by rigid muscular action." [No such action exists, I believe; and, if it did, it would shorten, instead of elongating the limb.] "It will be observed that the leg is projected away from its fellow, and the toe is turned a little outward, so that a person comparing the two legs will bring the sound towards the affected, rather than by great force, and consequent pain, draw the inflamed limb towards the sound one. Thus the sound leg does not traverse the median line without losing from an inch and a half to two inches of its length. If this be admitted as a sufficient explanation of the deception as to the actual lengthening of the diseased leg" [It cannot, because no such traversing of the sound limb exists], "our next inquiry will be to ascertain



the cause of the rigid muscular action which projects the foot so far away from its fellow, and leads to the appearance.

“The muscles which extend the thigh upon the pelvis, which carry the thigh backwards and outwards, away from the opposite limb, are the *glutæi*, aided by the rotators, which act in concert with them.—To the inordinate and powerful action of these muscles, then, I attribute the projection of the limb outwards. That they are capable of this effect, their ordinary action clearly points out.” [It has been already pointed out that such action would shorten the limb.]

The fact is, that the limb is a little lengthened, or rather the trochanter is slightly protruded; and this is well explained by the observations of Palletta, made with a different view.

He says, “*Dum pes, nulli fulcro subnixus, artum pendere cogit, videtur caput recedere a fundo acetabuli, intervallo linearum duarum cum dimidiâ. Si femur inflexum est, ejus caput ad cotylis posteriora accidit; proptereaque ab anteriori parte relinquit lineæ unius spatium. Distenditur itidem interius ligamentum, sive artus pendulus sit, sive femur sit flexum.*”

Here then (and it is surprising Palletta should not have seen it) is the reason why the limb is left pendent and apparently elongated, and why it is afterwards bent. The greater apparent lengthening is caused by the patient always endeavouring to relieve the affected limb, for which purpose he throws the weight of his body on the opposite side. The greatest extent to which real lengthening of the limb can take place without destruction of the round ligament, is a little more than an inch; and this has been noticed in a former part of the work, when treating of the anatomy and physiology of the joint.



We sometimes find the affected limb shorter than the sound one, without the disease having gone into the third stage.—This circumstance is of great importance, both as regards the diagnosis and prognosis of the disease.

Probably, in these cases, the head of the bone may occasionally be drawn by the muscles to the upper edge of the acetabulum, and in this way the already lengthened limb becomes shorter without being pushed backwards and upwards.

In this case, the shortening is never so considerable, and the free motion is never so much impeded in every direction, as in the third stage of the disease. The shortening never continues the same: it varies, and even entirely disappears, in different positions and directions of the limb: usually it is most evident in the perpendicular position, in which the pain is considerably increased, because in this position the whole weight of the body rests on the affected limb, and the head of the bone is pressed against the upper edge of the acetabulum. Besides, the great trochanter is usually situated more forward; the nates of the affected side are always, as in the second stage, more flaccid, and somewhat fallen in; not harder, broader, and projecting, as in the third stage; and particularly all those appearances are wanting which characterise disease of the hip in that stage.

It cannot, therefore, be difficult to an experienced practitioner, in these cases to recognise this stage of the disease, and properly to distinguish this shortening of the limb from the shortening and the irremediable displacement of the head, or from the mere shortening of the limb that occurs in the third stage.

In this stage, the limb is adducted and the foot slightly everted. “*Artus infirmus*,” as Palletta observes, “*sustentandæ corporis moli*

*ineptus, divergit a linea centrali, quam in pollicem pedis transmittit inflexo nonnihil genu."*

The diminished size of the limb is naturally explained by the fact that, in the case of this disease, the larger muscles, which move the leg, lose their power, and, when that is the case, there will be an apparent difference in the circumference of the two limbs; for, as all muscular fibres in a healthy condition have constantly a tendency to contract, so the muscles of an injured limb become flaccid, and lose that tendency, and the diameter of such muscles will be different from that of sound ones, which becomes very apparent in a case where the disease goes on to ulceration, or even to a more extended stage of disease.

The patient does not remain long in this condition: the pain at the knee, which was before slight, becomes very severe, and impedes every motion of the limb, particularly that of extension. This circumstance, combined with the fact of the pain in the hip attracting but little or no attention, occasionally deceives the practitioner, and in almost every case misleads the patient, as to the real seat of the disease.

In the usual state of the disease, the pulse is commonly regular, the skin cool, and the evacuations as in health. When, however, the disease advances, when the part affected becomes tender, and the pain acute, throbbing and uninterrupted, the pulse is then accelerated, the face alternately pale and flushed, the skin mostly moist and clammy, the tongue white, while the flesh wastes, and the strength declines. Starting and catching, during sleep, are frequently observed in this stage of the disease, and occasion great distress to the patient.

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Not unfrequently an entire remission of all the painful symptoms takes place prior to the occurrence of the THIRD STAGE, and the patient begins to entertain hopes of a speedy recovery.

If, however, the disease be not arrested at the second stage, a new and most formidable set of symptoms supervene. The elongated limb becomes gradually, or as is often the case suddenly, shorter; so that on examination it is found one, two, or more inches shorter than the sound limb; and the patient cannot, in the erect position of the body, place the foot of the affected limb on the ground, but only touches it with the toes.

“In the stage of shortening,” says Mr. Wickham, “the flexor muscles, the psoas and iliacus, are called into such action as to bring the thigh upwards and inwards in the position which has been noticed: they are called into exertion in consequence of the inaction from loss of power by wasting of their antagonists, the extensors (the glutæi).”

It would seem to me that the cause is here made the effect; and the effect, the cause. It is not the inaction of the glutæi that causes the activity of the psoas and iliacus, but rather the activity of the latter that causes the inaction of the former: the whole is, in fact, an involuntary adjustment to relieve the hip-joint. And in this view, Sir C. Bell more correctly says, “Remember how closely the tendons of the psoas magnus and iliacus internus are connected with the ligaments of the joint. Conceive the ligamentous apparatus within to be inflamed: can the patient in that inflamed condition stretch out the limb? No; because then the muscles and their tendons press on the inflamed parts.” To relieve the affected limb of the weight, the patient bends the body forwards and to the opposite side; he also bends the thigh on

the belly, and the leg on the thigh; and he seeks to keep the latter in this position by means of a pillow, or with his hands. To avoid pressure of the head of the femur upon the acetabulum, the patient, when in bed, also throws the affected thigh over the other, so that its weight may tend to lift the head of the femur out of the socket.

There are now, in the infirmary, thirty-four cases of diseased hip-joint, two only of which are in the second, and none in the first, stage. In thirty of these cases, the toes of the affected limb are slightly everted; and in the remaining four, inverted.

The apparent shortening, arising from these circumstances, will be easily distinguished from the real shortening of the limb, by placing the patient even on his back, and then bringing the pelvis into a straight position; when the limbs of both sides are found to be of equal length.

The real shortening often occurs without dislocation of the femur having taken place. A case of this kind occurred to me, some time ago, in the General Dispensary. A girl of the name of Dexter, who had been for a long time under my care, died with disease of the hip in the most advanced stage: there was shortening of the limb, prominence of the nates, and abscesses in the neighbourhood of the joint. All these symptoms led me to conclude, that there was dislocation of the head of the femur; but, on carefully examining the joint after death, I found the capsular ligament entire, and no dislocation. The head of the bone, and a great part of the neck, had been destroyed by caries, and in this way the shortening was produced without dislocation.

Mr. Liston\* similarly tells us, that "the shortening and deformity

\* Lancet, No. 657, p. 40.



do not in general arise from that cause (dislocation). The limb assuredly becomes shorter to a considerable extent; but it is not from dislocation. In one of the specimens, taken from a subject about twelve years of age, the limb was shortened more than two inches, but still the head of the bone retained its position in the cotyloid cavity; and you will find, upon looking at all the preparations, that, even where there has been complete loss of the head and neck of the femur, together with a great change in the condition of the acetabulum, there has been no dislocation. The bone has been drawn up a little by the action of the muscles, and has become a little shortened, but it retains its original relation to the os innominatum in all these cases. You will observe further, where anchylosis has taken place, that still the bone retains its natural position. Here is one preparation where there is not even a vestige of the head and neck of the bone remaining; but still the bone is in its proper place, and the shortening of the limb, of course, is to be attributed to the loss of substance in the femur, and also to the corresponding destruction of the articulating part of the os innominatum. I have no hesitation in saying that, in almost every instance, this will be found to obtain."

Mr. Wickham, in the same manner, says, "Dislocation from disease in the hip-joint is of rare occurrence, and can only happen when the ring of the acetabulum is broken down by absorption, or the head of the femur so lessened as to allow of a wider range to its movements in the socket, by which a slight degree of irregular action may displace it. I am inclined to think the latter case is unusual, for it may be found that the head of the bone is, as it diminishes from absorption, very gradually and closely drawn into the depth of the acetabulum, and not dislocated."



I repeat, then, that dislocation of the head of the bone, in the last stage of the disease, does not take place so often as is believed : at least our museums do not afford us so many specimens of dislocation as of destruction of the head and part of the neck without displacement. In some of these cases, the femur is strongly united to the acetabulum. That, however, which I believe most common is, that the head and portion of the neck is absorbed, the trochanter drawn towards the acetabulum, and the bone retained in its situation by the capsular ligament.

Sometimes, however, dislocation takes place, and the head of the bone ultimately rests on the dorsum of the ileum, as Plate VI. shows. The head of the bone, as well as the greater part of the capsular ligament, have been destroyed, and, there being nothing to counteract the action of the extensors, the femur is drawn upwards. By this dislocation, the length of the limb is shortened by nearly four inches.

Abduction and extension of the limb are difficult when it is dislocated on the dorsum of the ileum ; whilst adduction and flexion can be easily performed.

In a case mentioned by Mr. Earle, the head of the bone was dislocated into the ischiatic notch.

It sometimes happens that the symptoms which have just been enumerated, as characterising this stage of the complaint, do not present themselves ; but a lengthening of the limb takes place, in consequence of the head of the bone being drawn forwards, downwards and inwards, into the foramen ovale. When this occurs, we find the limb three or four inches longer than the other, the knee bent, and the foot turned outwards, with the toes pointing to the ground. A prominence is felt in the region of the groin, from the subjacent head of the thigh-bone.

Cases of this kind, however, are extremely rare. In the museum of the College of Surgeons, there is a preparation, presented, I believe, by Sir C. Blicke, in which the head of the femur was dislocated, from the effects of disease, into the foramen ovale.

Mr. Hicks of Emsworth had a case of this nature under his care, of which the following is an outline:—Master S., æt. nine years, in 1826 laboured under a severe affection of the hip, accompanied with great constitutional irritation. Matter formed in front of the joint, for the evacuation of which an opening was made. The wound continued to discharge for a long time, and pieces of bone occasionally came away. In the middle of August 1829, the child had a fresh attack of the disease of the joint. On the 8th of October, he was examined by Mr. Hicks, who found the limb much elongated, the knee and foot turned outwards, and the head of the femur near, or in, the foramen ovale. By counter-irritants, rest, and attention to the general health, the complaint in the hip was arrested, and the child restored to perfect health: the deformity, of course, remains. The nates, which were flat, or even flabby, are now become rounded or prominent, and swollen, and the toes are turned inwards.

Boyer relates a case of this kind; and, in reference to this occurrence, says, “the consecutive dislocation downwards and inwards, where the head of the bone descends into the foramen ovale, is more rare than the dislocation upwards and outwards. Nevertheless, cases of the first kind of displacement are occasionally met with.

Sir Benjamin Brodie, in the last edition of his work, alludes to a case of displacement of the head of the bone in this situation.

During this period, the pain is severe ; and the progressive destruction of all the parts of the joint ensues.

With such extensive mischief going on in the interior of the joint, we may expect to find the neighbouring parts participating in the disease.

When the glutæi are affected by the inflammation proceeding within the joint, the formerly wasted nates become tumefied, the surrounding cellular tissue inflames, the skin is put on the stretch and the superficial veins are distended, a red spot presents itself either on the nates or outer side of the thigh, and if an opening be not made the skin at last ulcerates and the abscess discharges itself. The formation of matter is indicated by the tumefaction, and, in most cases, by the great pain of the part, and the severe rigors with which the patient is affected. In the majority of instances the glands in the groin become enlarged and painful.

Generally these abscesses open on the nates, in the groin, or on the upper and outer part of the thigh.

Sometimes the ulceration extends through the acetabulum, and the matter, passing into the pelvis, descends, by fistulous openings, to the side of the anus, or more easily into the rectum. The flatus then comes through the sinus, and proves the existence of communication not only with the pelvis, but with the rectum. Sir B. Brodie mentions two cases in which the matter was voided by the rectum ; and, in a former part of this work, I have alluded to a specimen, in Mr. Liston's museum, taken from a patient in whom the abscess communicated with the rectum.

Abscesses sometimes open into the vagina, whence the matter is discharged.—The number of openings from the abscesses is sometimes very considerable.

The nature of the discharge from abscesses varies considerably, sometimes it is healthy pus, and at other times it is fetid, sanious, or black; and it is observed that when the matter possesses this character, small portions of bone frequently come away. Even the head of the bone has occasionally come away almost entire. Hoffman mentions two cases where the detached head of the femur made its way through the abscess, and was removed by the assistance of the surgeon. Mr. Chalk, the resident surgeon at the infirmary, has a part of the head of the femur which came away in this manner. The coming away of the bone is attended with great pain and constitutional irritation.

The duration of the discharge is uncertain; sometimes continuing for a long time, and in other cases for a shorter time, then ceasing and returning again. In some rare cases, hæmorrhage takes place from one of the fistulous openings, and to such a degree as to cause death.

Such are the distressing events attending the last stage of the disease.

It must be observed, however, that external suppuration is not a necessary consequence of the caries of the hip-joint and of shortening of the thigh-bone; for, in some instances, the disease will go through all its stages, and even dislocation or ankylosis occur, without any external suppuration taking place.

In many cases, after the cartilages of the acetabulum and the head of the femur have been destroyed, these parts, as already stated, ankylose without any dislodgment of the femur.

In other cases, the upper part of the femur becomes ankylosed to the surface of the ileum, on which it is placed; and the aceta-



bulum is filled up, partly by new matter of soft texture, and partly by the depositions of osseous matter.

In all cases, ankylosis between the head of the femur and the acetabulum is the most favourable termination that can be expected of the complaint ; for the only effect which then remains is a certain degree of shortening, and impeded motion of the limb.

In some instances, the attempt at the formation of a new joint is set up. The bony surfaces from which the cartilages have been removed become hard and polished, and although the ligaments are thickened, and some external deposition of bony matter has taken place in the ligaments and cellular membrane, yet some motion of the joint is permitted.

In cases where the matter had a free escape from the cavity of the joint by a direct and depending opening, I have met with the appearance of granulations arising from the surfaces of the bones from which the articular cartilages had been removed.—An instance of articular cartilage having regenerated, in those cases where motion has been preserved after the bones had been found to grate on each other, is said never to have been met with ; the surfaces have either been covered with a ligamentous substance, or have become hard and polished like enamel.

If the patient be a delicate scrofulous person, the constitution suffers considerably in the advanced stage of the disease : there is great prostration of strength and emaciation of the whole body, with night sweats and hectic fever, and he not unfrequently falls a victim to the complaint.

In conformity with the view I have taken, as to the constitutional nature of this disease, Mr. Mayo says, “It is to be borne



in mind, that, in scrofulous affections of the joints left to pursue their course, it is not the articular disease which is directly fatal: the patient, through it, indeed, is debilitated and worn; but the exhaustion of his frame and strength has tended to produce disease in the mesentery, or lungs, or in both, and to prove the immediate cause of dissolution."

Hectical symptoms will sometimes ensue, after the spontaneous bursting of an abscess from the hip-joint; and doubtless they require the utmost attention and assistance. Colliquative sweats and purgings, great emaciation, and an almost prostration of strength, frequently occur under the mildest possible treatment of the disease; when the abscess has burst, the patient will lie, sometimes for months, without the ability of assisting himself, and will scarcely bear to be touched in bed, without crying out in agony from the pain in the joint: all this may be considered as a natural consequence of the loose and unconnected state of the carious bone, and of the irritable state of the fleshy parts surrounding it; nevertheless, this most unpromising case will sometimes terminate successfully.

If, on the other hand, the patient is comparatively strong, the constitution suffers but little, and he recovers with no other mark of the disease than the deformity.

During the progress of the disease, the motions of the limb become more and more impaired; but the power which the patient acquires of using the dislocated limb, after the disease has subsided, is very great. I lately attended with Mr. Greeves, surgeon, of Goswell Street, a young woman whose thigh-bones were both dislocated from disease, and who could nevertheless walk about very well, without any pain and inconvenience to herself; and Mr. Wickham

has given the drawing of a case related in his work, in which there was dislocation of both hips from disease.

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The disease may continue many years before it is subdued ; and various causes may contribute to check or hasten its progress.

A patient was admitted into the infirmary this year, as I observed before, who had been affected with disease of the right hip-joint six years, without its going into a state of suppuration, and who, during this period, had been pregnant six times, the progress of the case having been arrested by the state of pregnancy.

A case is mentioned by Ford, which, after eighteen years continuance, terminated fatally from imprudently taking exercise.

Joseph Mitchell, æt. 51, boot-closer, was admitted into the infirmary this season, with disease of the left hip-joint, of forty-five years standing. He says that, when six years old, he fell down and struck the joint, which set up the disease that went through all its stages. Ever since that period, matter occasionally forms and evacuates itself on the outer side of the thigh, near to the great trochanter. The formation of the matter is ushered in by shiverings and very severe pain, compared to a stabbing or darting in the joint, by involuntary convulsions and twitchings of the limb, which occasionally continue for some time, and by great derangement of health. For two or three years at a time, he remains free from all bad symptoms, and is able to follow his occupation with ease. The limb is shortened four inches, and there is eversion of the foot. His former symptoms having returned, and his health being very much deranged, he was induced to seek admission into the infirmary.

On the contrary, the disease is sometimes very sudden in its

progress ; terminating fatally even within a few days from the occurrence of the attack.

Sir B. Brodie informs us that a young lady, nine years of age, being at play, on the 1st of January, 1808, fell and wrenched her hip. She experienced so little uneasiness, that she walked out on that day as usual. In the evening, she went to a dance ; but while there she was seized with a rigor, was carried home, and put to bed. Next morning, she was much indisposed, and complained of pain in the thigh and knee. On the following day, she had pain in the hip, and was very feverish. These symptoms continued ; she became delirious ; and she died just a week from the time of the accident.

On inspecting the body, on the following day, the viscera of the thorax and abdomen were found in a perfectly healthy state ; the hip-joint, on the side of the injury, contained about an ounce of a dark-coloured pus ; and the synovial membrane, where reflected over the neck of the femur, was destroyed by ulceration to about the extent of a shilling.

The same surgeon mentions the case of a woman, who died a week after a severe contusion of the hip : the cartilage of the head of the femur was found, in some parts, entirely absorbed ; in others, it had a fibrous appearance, similar to what has been described ; and he has noticed the same circumstances in other cases, sometimes connected with, and sometimes independent of, local injury. Generally speaking, the duration of the complaint is not so long in children as in adults. A child, three years old, of a scrofulous habit, was sent to me this year by my friend Mr. Winder, with an affection of the hip, which had gone into the third stage in less than three months.

## CHAPTER VI.

OF THE DISEASES WITH WHICH THAT OF THE HIP-JOINT MAY  
BE CONFOUNDED.

SOME of these are congenital.

In the congenital displacement of the hip-joint\*, the head of the femur is removed from its natural situation, the acetabulum, to the external iliac fossa, its position being analogous to that which occurs in luxation of the femur backwards and upwards from accident, or from the cause already described.

The characters which distinguish congenital displacement from disease of the the hip-joint †, are ‡, —

1.—In congenital lameness, the thigh is, from the first, shortened : in disease of the hip, on the contrary, in the first stage, no alteration from the natural length is perceptible, and afterwards the diseased limb is first considerably lengthened before it becomes shorter. The shortening of the limb also, which is observable in the last stage, is much more considerable than in congenital dislocation.

2.—In this congenital malformation, the shortened limb (if the child be put in a horizontal position, and the pelvis fixed with the hand) can, by gentle pulling, be lengthened without any pain ; and

\* Cruveilhier has given, in his *Anatomie Pathologique*, livraison II, Fig. 3, a plate of a skeleton, with original displacement of the femora.

† *Adversaria Chirurgica Prima* ; Auct. Palletta.

‡ *Repertoire Générale d'Anatomie*, tom. ii.



it immediately becomes short as soon as the extension ceases: in disease of the hip, this is not the case; and the shortened limb cannot be extended without the greatest pain.

3.—In the congenital dislocation, the nates of the affected side are either in their natural state, or somewhat flatter than in the natural state: in disease of the hip, on the contrary, when the limb is lengthened, the nates are flat, but when the limb is short they are tense and projecting.

4.—In this malformation, the shortened limb, with very few exceptions, is not at the same time thinner and wasted, as is invariably the case in disease of the hip.

5.—The motion of the hip is, in congenital dislocation, as free as in the healthy state; the child, with the exception of the lameness, being well and free from pain: in disease of the hip, on the contrary, when the limb is once shortened, the motions of the limb are for ever impaired; the patient occasionally suffers from attacks of fever; and the disease, at least at these periods, is connected with paroxysms of pain.

6.—In congenital dislocation, the child, when standing or walking, places the whole surface of the sole of the foot on the ground: those labouring under the disease of the hip rest only on the toes of the affected limb.

Delpech describes an osseous malformation, producing lameness of one or both sides, as sometimes depending on the mal-position of the acetabula, which may be situated forwarder or backwarder, more within or more without, than in the natural position of the part.

These deviations are generally caused by rickets, and are accompanied with more or less deviation of the spinal column.



In these often obscure cases of lameness about the hip-joint, he observes, that it is important to examine, with great care, the form of the pelvis and the dimensions of its parts, as well as those of the lower extremities, their mobility, &c., in order to obtain a correct notion of the origin of the mischief, which may depend on many different causes, among which some may be remedied.

He describes another as dependent on muscular malformation. This lameness, similar to that dependent on want of conformity between the articulating surfaces of the hip-joint, is sometimes produced by unnatural shortness of the psoas magnus and iliacus internus, the effect of which is to hold the pelvis inclined forwards, to increase the natural curve of the lumbar vertebræ, to prevent the complete extension of the lower extremities, and to cause that alternate balancing of the body, which is characteristic of deformities about the ilio-femoral articulation.

“These cases,” he observes, “are to be distinguished by the impossibility of extending the thighs beyond a certain point; by the elastic nature of the resistance, opposing this motion; by the increased inclination forwards of the lower lumbar vertebræ when the extension is augmented; and by the renewed flexion of the thigh when the bend of the lumbar region is diminished.

“There are,” he observes, “other cases of lameness about the hip-joint, dependent on defect in the relative length of the muscles of the posterior region of the thigh inserted into the tuberosity of the ischium, proceeding from an unusual inclination of the pelvis forwards.”

In these cases, the extensors of the legs have more freedom, and the flexion of this part is not impeded; but in those described above, the contrary occurs, and the patient prefers a sitting pos-

ture, on very low seats, because he can then keep his limbs in that degree of relaxation that is agreeable. When the patient holds himself upright, the condyles of the femur draw upwards the muscles of the calf, and the heel is raised from the ground. The increased undulations of the spine from the too-forward inclination of the pelvis; the alternate angles formed by the thighs and legs imperfectly extended, and by the foot, the flexion of which is not sufficient; the narrowness of the base of support, reduced as it is to the space comprehended by the metatarsus and toes;—all these circumstances render the erect posture little secure, and progressive motion rapid, unsteady, and limping\*.

It has been noticed by Brodie, that sometimes the two lower extremities are not of precisely the same length; and that this may be the result of original formation, the femur and tibia of one side being respectively longer than those of the other side. If the whole of this difference amounts, as it sometimes does, to an inch, or an inch and a half, the individual is observed to limp in walking, and the great trochanter belonging to the longer limb is lighter and more prominent than that of the other; and this might lead a superficial observer to mistake the case for one of diseased hip.

The disease of the hip-joint may be confounded with accidents, abscesses, &c.

In some wounds of the hip-joint, a discharge of synovia renders it evident that the capsule has been penetrated; in others, it is doubtful; in almost all, great swelling occurs.

In necrosis, when the ends of bones, which are less frequently

\* On Deformities of the Spine, by L. Beale.

the subjects of this disease than the shafts, become secondarily affected, the existence of the disease is evident long before the joint becomes involved, and it needs, therefore, no particular direction for the discovery of it.

Where necrosis does occur at the ends of bones, the joint is soon involved; but there then occurs a disposition to frequent attacks of erysipelatous inflammation of the skin over the joint, and this recurs so often as considerably to injure the general health. This symptom is an almost constant attendant on disease of the bony structures, whether in the form of necrosis or caries.

In abscess in the neighbourhood of the joint, the hip over its surface is swollen and hard, and gives an elastic feeling on pressure; the skin is shining and very tense; and there is a sensation of deep fluctuation.

The disease of the hip may be confounded with the deep-seated formation of matter in the region of the groin; either connected or unconnected with a carious state of the bones of the pelvis. In these cases, there is very acute pain in the anterior region of the hip, with shiverings, and inability to rest the limb on the ground; but the great diagnostic mark is the absence of pain on rotating the head of the femur. There is no pain over the posterior part of the joint, or at the knee. I attended a case of this kind during the present year with Mr. Garrod, of Hackney, and it was involved for some time in obscurity.

The diagnostic marks between psoas abscess and the disease of the hip-joint have been thus arranged:—First, in psoas abscess, the patient complains of violent or dull pain in the region of the loins, which is very much increased in the upright posture of the

body, and every motion of the limb, particularly on extending it: in the diseased hip, there is no fixed pain in the loins; it is felt more in the neighbourhood of the hip, and especially in the knee. Secondly, in psoas abscess, during the whole course of the complaint, there is no deviation to be perceived in the natural situation of the trochanter, and no difference in the length of both limbs: in diseased hip, on the contrary, this is always the case. Thirdly, in the affection of the psoas muscle, the patient cannot turn the foot of the affected side outwards, without increasing the pain: in diseased hip, on the contrary, the foot is generally turned outwards. Fourthly, on taking a deep inspiration, on coughing, crying, and in the erect posture of the body, the fluctuating swelling either on the nates or on the front of the thigh increases, and the exit of the matter, if the abscess be burst or opened, will be facilitated: in abscess of the hip-joint from disease, neither is the case.

In fungus hæmatodes, the tumour may be situated over the trochanter major; but it appears to be detached from the deep structures; the skin covering it is shining and discoloured, and it ulcerates at a spot from which a dark fungous matter springs up, and sometimes bleeds.

In an affection rarely occurring, namely, inflammation and supuration in the bursa, beneath the conjoined tendons of the psoas and iliacus, it is observed, that besides the absence of acute pain on jarring the articular surfaces, by compression at the sole of the foot, if we cause the patient to lie on his belly, we do not see that flattening of the buttock, and prominence of the trochanter, so characteristic of hip-joint disease.

In diseases of the sacro-iliac symphysis, or articulating apparatus connecting the sacrum with the os innominatum on one side, the



patient complains of pain shooting along the limb, and perhaps of pain in the knee, walks very erect—the most striking circumstance in this case, lifts his feet but very little from the ground, advances them as little, so as to avoid jarring, and cannot bend the body in any way without great pain: but, on examining the limb, the pain is not aggravated by abduction, rotation outwards, or any pressure on the trochanter, if counter pressure be made on the opposite one, or by pressure on the end of the femur, or on the femur by means of the bones of the leg, which is the case in disease of the hip-joint \*.

In caries of the spine, pains are, in some instances, referred to one groin and hip: but pains, and a sense of constriction, are also felt afterwards in the legs and thighs; the muscles are found not to be properly under the dominion of the will, so that the patient occasionally loses a step, or trips in walking; and this is generally followed by a loss of voluntary power over the inferior muscles.

Other diseases still, with which that of the hip-joint may be confounded, are nervous or sympathetic.

Sciatica is distinguished from disease of the hip by the following character:—

1st. In sciatica †, the pain ‡ is usually felt, at the very commencement, in the hip, immediately behind the great trochanter, and extends to the sacrum, or along the course of the nerve, to the outer ankle or the outside of the foot: in disease of the hip, the pain is not unfrequently absent, and, if present, it is more on the

\* Mr. Liston's Lectures; Lancet, No. 658.

† Commentatio de Ischiade Nervosâ; Auctor. Cotunni. Vienna, 1770.

‡ Rust, cit. Op., p. 52.

upper and fore part of the thigh, principally attacks the knee, and never follows the course of the sciatic nerve. In the nervous affection, the pain sometimes indeed occurs on the fore part of the thigh, as when the anterior crural nerve is affected, and pressure, where the nerve passes under Poupart's ligament, increases the pain: disease of the hip might then be mistaken for sciatica, if the other marks of distinction were not sufficiently evident.

2nd. Patients who suffer from sciatica are lame, and find great difficulty in walking: many of those who have disease of the hip can go about pretty well during its first stage.

3rd. In sciatica, no change can be perceived in the direction of the trochanter: in disease of the hip, on the contrary, it deviates more or less from its natural position.

4th. In sciatica, during the recumbent position, there is not observed the slightest stiffness in the joint, nor generally any apparent difference in the length of the limbs: in disease of the hip, this is the case only in the first stage; and, at all other times, the free motion of the joint is impaired, and the relative length of the limb affected.

5th. Sometimes, in sciatica, owing to the violence of the pain and the consequent spasmodic contraction of the muscles, the limb is pressed deeper into the acetabulum and is thus shortened: but then, there is no previous lengthening as in the hip disease.

Disease of the hip may be confounded with an affection to which children are subject at the time of dentition.

A mother may bring to a surgeon a child with supposed disease of the hip: on inquiry, he learns that the child could walk at the usual period, but that, when eighteen or twenty months old

(or even at an earlier age), he was unable to stand, and that the child was at this time cutting the teeth. On examination of the limb, we find it wasted, the nates of the affected side flat, and the limb, if there be any difference, a little longer than the sound one. When the child attempts to walk, it cannot raise the limb from the ground, but draws it along; and when it stands, the weight of the whole body is rested on the sound limb, whilst the limb of the affected side is half bent.

The diagnostic mark of this disease is the absence of any pain in the joint. If we place the child on the table, and press in the neighbourhood of the joint, or rotate the head of the femur, no pain is produced: whereas, in disease of the hip, the pain would be great.

After the period of dentition, the general health is little affected by this complaint. Some years commonly elapse before the child recovers the use of the limb. I know a child, now nine years and a half old, who was attacked by this complaint in the right lower extremity, when at the age of a year and ten months, but who has not yet quite recovered the use of his limb; there is now great wasting of the muscles of the leg and thigh, a falling in of the nates, and eversion of the foot; when he walks, the limb is propelled as if it were an artificial contrivance fastened to the body; the affected limb is longer than the other; and there is a curvature of the spine.

There is another form of disease, which may be readily mistaken for disease of the hip, and which occurs in nervous females, either just at the time when menstruation may be expected to commence, or afterwards, when some irregularity in that function has taken place.

The patient complains of great pain in the hip, which extends also to the lumbar region and down the thigh to the knee, a pricking sensation, and coldness in the affected limb, and an inability to walk. There is also great nervous agitation, either affected or real, in these cases. Pressure in the region of the hip occasions great pain; but whatever part you touch appears equally painful, whether over the joint or near to it. The bowels are costive; and the catamenia irregular.

In these cases, there is a great tendency to contraction, either of the thigh on the pelvis, or of the leg on the thigh; and unless we take means, from the commencement of the disease, to counteract this, we have more trouble with the subsequent deformity than the original complaint.

I attended, with Mr. Harkness, sen., a young lady, at Limehouse, affected with this complaint. Before the patient was placed under our care, the case had been mistaken for disease of the hip, and *moxæ* had been applied. The most positive assurance on our parts could scarcely remove the impression, which existed in the minds of the anxious parents, of there being no organic disease in the joint, and of there being no necessity to pursue the counter-irritant plan of treatment which had been begun. The knee was very much contracted, and a good deal of trouble was experienced in straightening it. Some years elapsed after the first attack of the complaint before the patient quite recovered.

My attention was first directed to this peculiar form of disease by the perusal of an able article in Dr. Johnson's *Medico-Chirurgical Review*, for June 1828, in which, cases of this complaint attacking the knee are related. I have met with several cases, since that time, both of the hip and other joints.



From this description, we may distinguish between this nervous affection and disease of the hip. In the former, pain is felt, from the commencement, in the hip, and is not confined to the joint, but is diffused over the whole region, extending to the loins, and to the knee; the patient is also unable from the first to walk; and the great nervous agitation, the state of the intestinal and uterine secretions, and the unaltered position of the trochanter major, convince us that the case is not one of disease of the hip.

“There is one circumstance,” says Dr. J., “attending this hysterical affection of the joints, which is calculated to mislead practitioners—namely, their being, for the most part, consecutive to a blow or injury. The fact is, that it is generally some cause of this kind which determines the local habitation of the hysterical leaven that is lurking in the constitution.”

Mr. Abernethy informs us, that there are many cases in which people halt as if they had this disease, and yet, upon putting their digestive organs right they get well; that, now and then, pain referred to the hip and the knee, and even wasting of one of the limbs, from disuse, will occasionally arise, in consequence of disorders of the digestive organs, from irritation in the intestinal canal, from the lodgment therein of sordes, or worms; that the pain may be referred to the course of the sciatic nerve, or the anterior crural; and that the muscles may all shrink to a certain extent; but that, by putting the digestive organs into a proper condition, by driving the worms out, or evacuating the sordes, the patient is again restored to health, the limb becomes vigorous, and the muscles regain their former condition and development.

Sir C. Bell \* also alludes, in his lectures, to sympathetic affections of the hip-joint. "The nerves which go to the internal part," says this eminent surgeon, "have branches which run externally over the ileum ; and the nerves which pass over the ileum to the hip, and those which pass anteriorly to the groin, are often affected by disorders within ;—disorders of the bladder, of the kidneys, and of the rectum. Sometimes a patient will merely have piles ; he will not tell you of them, but complain of these pains in the hip, thus concealing the cause of the sympathetic pain. So again, a man may labour under stricture ; the stricture affects the bladder, the affection of the bladder will be shown by stiffness and pain in the loins and the hip. You cure the man of his stricture ; and, when the bladder dilates freely, and the kidney regains its functions, he will get rid of what he has called his *lumbago* and the stiffness in the hip-joint ; and so far from walking double, or stooping, and being unable to rise again, he is free from pain, and capable of free motions in the hip and loins."

\* London Medical Gazette, vol. xiv. p. 297. —

## CHAPTER VII.

## OF THE TREATMENT OF THE DISEASE OF THE HIP-JOINT.

IN the treatment of the disease of the hip-joint, careful reference must be had to the state of the constitution. It is essential to distinguish between those cases which occur in strong subjects, and those which take place in persons of a scrofulous habit. In strong persons, or those of a rheumatic diathesis, or where cold, external violence, or gonorrhœa has given rise to the disease, remedies of a different character must be employed than in persons of a weak or delicate constitution, in whom the local mischief is a mere sign of constitutional disturbance.

In the former class, rest must be prescribed, for every motion of the body gives pain ; blood must be taken, by leeches or cupping, from the region of the joint ; and the quantity must be regulated by the amount of pain and the strength of the patient. Internally, calomel and opium should be given so as to affect the mouth.

Sometimes, however, from a peculiar state of constitution, mercury cannot be exhibited internally, or, if it is given, a most distressing train of symptoms occur, such as pain or uneasiness about the epigastrium, tenesmus, frequent but scanty mucous stools, more or less tinged with blood. The evacuations are at first more copious, and relieve for a time the irritation of the bowels ; but, as they become more scanty, and more frequently repeated, the irritation and general

uneasiness are increased. Opium exhibited internally relieves at first, but soon loses its effect. An opiate injection is most to be depended on: about fifteen drops of the liquor opii sedativus, may be thrown up the rectum in half a pint of gruel, or thin starch, with advantage. As the bloody stools seem to indicate that there has taken place some slight lesion of the mucous membrane of the intestines, which is aggravated whenever the mercury comes in contact with it, this medicine must be immediately left off.

If, however, the mercurial action can be borne, it is generally sufficient, if early set up, to arrest the complaint; but there are some patients in whom the disposition to the disease is so strong, after it has once come on, that it returns the moment the mercurial action is discontinued. In such cases, mild mercurials, as hydrarg. c. cretâ, with Dover's powders, or the Plummer's pill, may be given in alterative doses, and be continued for some time; for it will not do, on every fresh attack, to have recourse to strong mercurial courses, which, though they relieve for the time, increase the tendency to the attack. In combination with this alterative course, sarsaparilla, in various forms, should be administered.

If mercury cannot be borne, colchicum, either in the form of extract, or the wine of the seeds, should be administered, combined with some alkaline aperient, at regular and stated periods.

"It may be necessary," says Mr. Liston, "to exhibit some medicine calculated to determine to the surface, and which will assist your local means. You may give the antimony in combination with morphia, as we did in a pretty acute case that was admitted here the other day; you may give the extract of aconite—a medicine, so far as I have seen, very active in subduing the force of the circulation. It is even more powerful, and more to be depended



upon, than the antimonial preparations. It must be given in very small doses, and repeated. It is a very powerful sedative, and one that has a direct action on the heart and vessels. Its exhibition is generally followed by gentle perspiration, and by well-marked diminution both of the frequency and force of the arterial pulsations. We use it in a good many cases here; and I think that by the employment of it we have obviated the necessity of abstracting blood in many cases." In a note to me, Mr. Liston says, "that the form for an adult is, four grains of the extract of aconite to eight ounces of water, two table spoonfuls to be taken every four or six hours. It often has a wonderful effect in subduing inflammatory fever, causing perspiration and cessation of pain. It will supersede venæsection in many cases."

I have never used the *aconitum* internally, but have often prescribed the *aconitina* to be employed in the form of an ointment, in the proportion of six grains of the *aconitina*, with a few drops of spirits of wine to dissolve it, to six drachms of lard; a little of the ointment, of the size of a pea, to be rubbed over the region of the hip, whenever the pain is very violent. Its use should be discontinued when numbness or tingling comes on. The great objection, in public practice, to the employment of this remedy, is its expense; and, in private practice, the great care and watching which its exhibition requires.

When the intensity of the inflammation has been in some degree subdued, a blister may be applied over the region of the hip; and, if necessary, several blisters may be employed in succession. I have always adopted this plan in preference to keeping one open.

The diet of the patient is, in this stage, a point of the highest

importance. It should be light, little animal food should be allowed, and spirits and all fermented liquors carefully prohibited. The patient will experience great relief from the hot bath, in this stage, provided there be no great motion or exertion used at the time of taking it; and, if the hot bath cannot be taken, warm fomentations should be frequently applied to the part.

When the symptoms of active inflammation have subsided, a certain degree of stiffness of the joint, an uneasiness in the hip or knee, and an inability to walk far, often remain. In this state, counter irritation, by means of stimulating liniments, composed of the *linim. camph. c.*, with the *liquor ammoniæ*, or the *linim. saponis*, with *tinct. lyttæ*, should be employed. The tartar emetic ointment, or the *ung. hydr. fort.*, with iodine and tartar emetic, may also be used with advantage. But I think no plan will be found so serviceable, in this chronic state, as that recommended by Mr. Scott\*. “The surface of the joint,” says Mr. S., “is to be carefully cleansed by a sponge, soft brown soap and warm water, and then thoroughly dried. Next, this surface is to be rubbed by a sponge soaked in camphorated spirit of wine, and this is continued a minute or two, until it begins to feel warm, smarts somewhat, and looks red. It is now covered with a soft cerate, made with equal parts of the *ceratum saponis*, and the *unguentum hydargyri fortius cum camphorâ*. This is thickly spread on large square pieces of lint, and applied entirely round the joint. Over this, to the same extent, the limb is to be uniformly supported by strips of calico, spread with the *emplastrum plumbi* of the London Pharmacopœia. These strips are about one inch and a half broad,

\* On the Treatment of Chronic Inflammation, p. 133.

and vary in length : some are fifteen inches ; others, a foot ; others, half these two lengths ; and the shorter or longer are selected, according to the size of the part round which they are to be applied. This is the only difficult part of the process. This adhesive bandage ought to be so applied as to preclude the motion of the joint, prevent the feeble coats of the blood-vessels from being distended by the gravitation of their contents in the erect posture, and thereby promote their contraction. Over this adhesive bandage, thus applied, comes an additional covering of *emplastrum saponis*, spread on thick leather, and cut into four broad pieces, one for the front, the other for the back, the two others for the sides of the joint. Lastly, the whole is secured by means of a calico bandage, which is put on very gently, and rather for the purpose of securing the plaster, and giving greater thickness and security to the whole, than for the purpose of compressing the joint. This is an important point, as otherwise an application which almost invariably affords security and ease may occasion pain, with all its attendant mischief."

Having given this plan of treatment an extensive trial during the last seven years, I will briefly state the result of my experience. In the acute inflammation of the joint, its power is not sufficiently active ; and in cases where the patient is subject to sudden attacks of secretion of synovia, its application is not to be recommended, for the pressure of the bandage from without, and of the secretion from within, causes to the patient so much pain that I have frequently been obliged to remove the plasters. I do not employ the plan where there is a large collection of matter in the region of the joint, because I have not found the plaster to promote the absorption of the matter, but to cause it to occupy a



greater space in the interior of the limb. But when the sinuses are discharging, then the support and action of the plaster appears to be beneficial. If the secretion of matter is copious, the dressings will require to be changed oftener than when the discharge is slight. The case in which I also conceive it to be of use is when there is any cellular disease about the region of the joint \*. The principle, Mr. Wickham judiciously observes, on which the plan of treatment seems to act, is to give support to the weakened and

\* When treating of the pathology of the disease of the hip-joint, I omitted to state that Dr. Nicolai, of Berlin, in a Latin prize essay, which was crowned by the Cercle Medical of Paris, has described an affection of the joints originating in the cellular tissue exterior to the articulation. I have not seen the memoir itself, but in the 13th volume of the *Medico-Chirurgical Journal* there is an abstract of it, from which the following observations are taken :—"In the first stage, the cellular tissue surrounding the tendons and ligaments is loaded with blood-vessels, thickened and infiltrated with a great quantity of a mucous or 'glutinous' matter, which matter is principally deposited immediately around the tendons and ligaments. In the hip, this coagulable lymph, or whatever else it may be, is principally seated at the lateral and posterior parts of the joint. The deep parts of the articulation have, as yet, experienced little change, save that the periosteum, and synovial membrane, are injected in parts, whilst the latter is altered in consistence, and adhering to the mass of lymph investing the ligaments on its outside.

"In the second stage the vascular condition of the cellular tissue has disappeared, and the latter structure has become converted into a fibrous, lardaceous substance, intersected by white striæ, which, on examination, are found to be made up of enlarged vessels, mostly obliterated, and so thin in their coats as to resemble veins. This fibrous substance envelopes the ligaments, &c., but it can be readily peeled from them, leaving them in their natural condition, and 'proving that the original site of white-swelling is in the cellular texture.' Some few points, again, are much more vascular, of a blackish red colour, and infiltrated with caseous and livid-looking matter.

"Third stage. The principal vessels in the tumour are now obliterated;—the skin, cellular substance, &c., are more or less disorganised;—the bones, tendons, and ligaments, are enveloped in a caseous, lardaceous matter;—the synovial capsule is red and thickened, and its inner surface lined with a caseous matter. When sinuses exist, they ramify through the soft parts in various directions, penetrating to, and denuding of periosteum the bones, or exposing the cartilages."

Mr. Wickham has also described the disease of the cellular tissue in the region of the joints. "Two kinds of cases," says Mr. W., "are presented to us by disease of the cellular membrane; the one in which a single or more spots may have been the seat of the inflammation, having its origin from some injury which the part may have received, and pursuing a chronic course to the formation of small sacs of pus in those situations, which, perhaps, ulcerate through the synovial membrane. The second case is that in which the whole of the cellular membrane surrounding the articulation becomes inflamed, and ultimately envelopes the joint in one large abscess. The first case is the more common of the two; the latter the effect of a sudden attack of inflammation, and more active in its course."



congested vessels, preventing the arteries from supplying the diseased part with more blood than is sufficient for its healthy condition, and enabling the veins at the same time to empty themselves of that blood which has been delayed in them, and to forward it more quickly to the source of circulation, the heart. The absorbents are also aroused to activity by the stimulating power of the mercurial and camphor ointment. The accomplishment of these objects should be had in view in the employment of this remedy, to give the probability of successful issue to any case.

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In the next class of patients, those in whom the disease may truly be said to have a constitutional origin, a very different plan of treatment must be adopted. In fact, the first stage of the complaint often exists some time before it is discovered. In every case of this kind, an accurate examination should be made of the state of the viscera, for one of the grand secreting organs will almost always be found in fault, and, unless this be rectified, all local remedies will be unavailing. The organ most frequently found deranged is the liver ; and, at the infirmary, leeches and local means are applied to this organ oftener than to the affected joint. We must carefully avoid the adoption of all such local means as are calculated to lessen the power of the vital system. In this class, even in the early stages, the taking of blood is seldom advisable ; and it can never be carried so far as in other subjects.

The patient must have all the advantages that can be derived from residence in pure air ; for patients in whom a variety of local means have been tried without effect, as long as they re-

mained in London, or other large cities, and in whom the disease has proceeded from bad to worse, will get well without the employment of local means, or at least with very few, on removal to the sea side.

The following is one, amongst many cases, which might be given in illustration of this truth :—Rosetta Hunott, æt. two years and half, of delicate habit and fair complexion, residing in Derby Street, Gray's Inn Road, was brought to me by the mother, in May of this year, for an affection of the right hip-joint. The mother told me that the child had walked farther than usual about a week before, since which it had gone lame. On examination, there was no alteration in the length of the limbs, and no pain on pressure ; but when the child attempted to walk, it limped considerably, and propelled the affected limb as if the knee-joint were straight. The child appeared very delicate, and the tongue was covered with a white fur. I ordered the occasional application of a blister to the joint, and small doses of hyd. c. cret. and pulv. rhæi every other night, and the recumbent posture for the child. After the use of these means during eight weeks, the affection of the joint was not relieved, and the child's general health was considerably deranged. Under these circumstances, I strongly advised the mother to take the child to the infirmary at Margate, and my request was immediately complied with. Warm bathing once in two days, at first, and afterwards once in three days, was employed for six weeks ; the same internal remedies were used as had been given in town ; but leeches were applied to the region of the liver in consequence of hepatic derangement ; and the child was ordered to be taken out in the open air as much as possible. By these means, the affec-

tion of the hip-joint was completely removed, and the child's general health restored at the end of six weeks. The child is now quite well.

Warm bathing is found to be very serviceable. Indeed, in no class of patients, and in no stage of this particular disease, is sea air and warm salt-water bathing so beneficial as here. Warm or tepid bathing agrees with nearly every patient.

The sea side, however, is not beneficial in cold weather. The best time is from the beginning of May to the end of October; but, if the autumn sets in cold earlier than usual, the patient should return before this. Even those persons who, whenever they bathe in the sea, invariably have shiverings or feel cold, should never try that as a remedy.

My friend Dr. Brown, who was acting physician to the infirmary thirty years, told me that, when the cold sets in, the strumous sores assume, in all cases, a very unhealthy, and in some cases a sloughy, appearance.

The period at which patients affected with disease of the hip-joint derive most benefit from going to the sea side is, either at the commencement of the disease, before much inflammatory action has begun, or towards the end of the third stage, when the abscesses are discharging, and the health is impaired by the long continuance of the complaint. On the contrary, during the formation of matter, and before the abscess begins to discharge, the patient will not derive much benefit from the change.

The plan adopted at the infirmary is as follows:—The patient commences with the warm salt-water bath, about three times a week, at a temperature of 96°, and is directed to remain in it from fifteen

to twenty minutes each time. Afterwards, the tepid bath is used ; and then, dependent on the state of the weather and the health of the patient, the cold bath is employed, one dip only in the sea being allowed each time. The time selected for bathing is in the morning. The cold or warm douche bath is often used in this stage of the complaint, and with very good effect.

Doubts have, however, been expressed as to the utility of bathing. Mr. Laurence says, "I do not know that the advantages obtained at this place (alluding to the infirmary) arise from any great virtue in the water: the truth is, that those patients who improve, do well in consequence of the change of air, and when the constitution derives benefit from this, it is immaterial what local treatment is employed."

Certain it is, that there are some cases of disease of the hip-joint, complicated with that delicate state of the lungs which imperiously forbids us to employ cold sea-bathing, or even resorting to the sea side, but these are exceptions to the general rule.

Scrofulous patients, especially, should not remain longer than four, or at most five, months of the year at the sea side. In this class of patients, rest should not be so strictly prescribed as to endanger the health of the patient. To obviate, in some degree, the ill consequences of want of exercise, the patient should be taken as much as possible into the open air, which acts as a stimulus to the vital powers ; and gentle exercise, provided pain in the joint does not follow, may be allowed. A relative of my own struck his hip in 1831, from the effects of which he soon recovered, and felt no inconvenience until 1834, since which time the joint has been more or less affected. Whenever he is able to take a warm bath, and a moderate walk regularly, his joint is nearly well ; but



the moment he is very much confined to business, and cannot take regular exercise, the limb becomes stiff and painful. The difficulty, in these cases, is to know at what precise period of the disease does more than increased synovial secretion take place, and the irritation which attends it, and at what period does organic change or injury of the synovial membrane supervene. In fact, I firmly believe that the doctrine of rest is carried to too great an extent, and that modified exercise is of vast importance in this disease. Lugol seems to entertain the same opinion. "I may venture," says Dr. L. \*, "to solicit the notice of practitioners to the results of my general experience, in which I never observed any accident or inconvenience to result from this innovation (the employment of exercise). Of seventy-six scrofulous patients at present in my wards, there are thirty-two who, if treated according to the too general custom, would be restricted to absolute confinement to bed. Under my direction, they walk daily in the hospital promenade, in the same manner as the different individuals afflicted with other forms of the malady."

"The study of scrofula, as regards its causes and diagnosis, denotes that this disease has, for its general character, an original weakness, which arrests the development of organs, but which renders them subsequently subject to a sudden and exaggerated increase. Rest has ever been regarded as a debilitating agent; it is the ordinary associate of all antiphlogistic systems of treatment. The most vigorous and robust constitution would inevitably be weakened, and brought to a state of etiolation by long-continued repose. If rest thus debilitates the vigorous, still more should an invalid, of primary weak constitution, be enfeebled by its operation, and

\* On Scrofula, p. 148 ; translated by W. B. O'Shaugnessy, M.D.

his malady proportionately increased. But the matter is not one of argument alone; visit those patients confined to bed for six months, and on a debilitating regimen; they are pale, emaciated, weak, and depressed. I admit that the motion of a diseased joint is attended with some inconvenience, but the advantages derived from it are great beyond all proportion. In fine, for three years that I have followed this method, I have never been induced to change it, or even modify it, but for a transitory period in some unusual cases."

Above all, attention must be paid to the secretions and excretions, mild mercurial purgatives should be given, once in two or three days. I begin very early with the hydriodate of potass: of a solution of the medicine containing a drachm to an ounce of water, four or five minims may be given to a young child, three times a day, and the best time for its exhibition is soon after a meal. According to the age, the dose may be increased. The diet should be light and plain, but nutritious; animal food should not be prohibited, but wines, spirits, and all fermented liquors should be interdicted.

Mild purgatives, moderate exercise in the open air, sea bathing, the use of the hydriodate of potass, and light nutritious diet are, in this class of patients, the remedies to be relied on in this stage of the disease.

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SECOND STAGE.—If the disease goes into this stage, the state of the patient becomes very critical, and the chance of a successful issue extremely doubtful. The striking difference which existed in the two states of constitution alluded to before is not always

so apparent here, and the originally strong and feeble often present the same appearance. In the stronger subject, however, the pain is usually more severe; and, in such case, if there be much fever and constitutional irritation, the antiphlogistic plan should be resorted to; saline and antimonial medicines, combined with purgatives, should be given; and low diet and perfect rest strictly enforced. If the pain continue very severe under this treatment, even local abstraction of blood may be used, mercury with opium administered, and mercurial frictions, with iodine, employed. Should these means fail, a blister may be applied, as in the former stage, from time to time, over the posterior region of the hip.

It is in this stage that the employment of issues, setons, moxæ, and the actual cautery, is resorted to—means which I have long since abandoned, as I consider the same amount of relief can be afforded to the painful symptoms by the counter-irritation of a blister, or the mercurial ointment, with iodine and tartar emetic, as by the issue, and other drains, without the certainty of deranging the constitution of the patient.

The limb must here be kept at rest, and the mode practised by Mr. Liston is well adapted for that purpose.

“It is composed of slips of lint—the patent kind answers best for the purpose—dipped in a strong solution of gum arabic, which is laid upon the parts previously greased: several layers of dry lint are added, and the whole is confined with a bandage. When the composition dries, a firm case, composed of thin layers of lint, and turns of the roller, is formed, exactly fitting the parts, extending from the knee to the false ribs, embracing the joint completely. The case can be taken off and re-applied, trimmed neatly at the edges with clean bandages.”

In weak and strumous subjects, the greatest attention must be paid to the state of the constitution; slight mercurial alteratives, with various forms of sarsaparilla \* should be administered; or, if the power of the digestive organs be impaired, some bitter infusion with the alkalies should be administered. The use of hydriodate of potass will be found very serviceable in this stage, in combination with the sarsaparilla, and the following is a good mode of administering it.

R̄. Decoct. sars. comp. ℥ xv.  
 R. Calumb. ℥ j.  
 Hydriod. potass. gr. xv.  
 Iodine, gr. iss.  
 Extract. sarsæ, ℥ iij.

For an adult, two or three table spoonsful thrice a-day soon after a meal.

Gentle exercise in the open air in fine weather, with the aid of crutches, should be allowed, and occasional warm baths; though I have less confidence in the salt-water bathing in this than the other two stages. As to the employment of issues, &c., in these

\* R̄. Radicis sarsaparillæ Jamaicensis concisæ, ℥ iv.  
 Glycyrrhizæ, ℥ ss.  
 Aquæ calcis, Oij.

Macera per horas viginti quatuor in vase vitreo optime operculato, et in loco frigido et obscuro : dein cola in usum. Sumat hujusce infusi dimidium partitis vicibus quotidie.

This is the form recommended by Dr. O'Beirne.

The following is also a good formula for the preparation :—

R̄. Radicis sarsaparillæ Jamaicensis contusæ et concisæ, ℥ ij.  
 Radicis glycyrrhizæ, ℥ iv.  
 Liquoris potassæ, ℥ iiss.  
 Aquæ ferventis, ℥ xvij.

Macera per horas viginti quatuor vase clauso sine igne, dein cola. Sumatur 4ta pars bis vel ter in die.



weakened persons, they are positively injurious, by still further debilitating the constitution, and by the extension of the irritation (which not unfrequently happens) from the local drain to the affected joint, thereby increasing its disease. I think that the officers of the infirmary will bear me out in saying, that they have never seen any good effected by these means in weak scrofulous persons in this stage, and that these remedies have long since been exploded from the practice of the institution.

The diet requires great attention. It should be such in quantity and quality as the stomach can readily digest. It should consist of plain animal food, with well boiled vegetables; but wine, spirits, and malt liquors should be prohibited.

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THIRD STAGE.—During this stage, the treatment, in strong subjects and scrofulous ones, is nearly the same. As caries of the bony structures is taking place, and the formation of matter is to be expected, the limb is to be kept at perfect rest, and its position is a point of great importance.

The patient is generally inclined to lie on the side opposite to that which is diseased.

In explanation of this, it is properly observed, that the *psoas magnus* and *iliacus internus* come down over part of the pelvis, run over part of the joint, and are closely connected with the accessory and capsular ligaments. Hence, in order to relieve the pain in inflammation of the joint, there must be a relaxation of these muscles, which implies a certain position of the person, whether standing upright or lying in bed. On the contrary, the *glutæi* come down from the back of the pelvis and cover the hip,

and their action would be to propel the head of the bone into the inflamed cavity. Hence the patient adopts that position of the pelvis and thigh which tends to counteract this pressure, and to throw the head of the femur out from the inflamed cavity.

This position, however, as observed by Sir B. Brodie, necessarily distorts the pelvis, increases the disposition to a lateral curvature of the spine, and, in those cases in which the round ligament is destroyed, facilitates the escape of the head of the femur from the acetabulum, and the production of dislocation. "Something," he observes, "may be done towards preventing this last effect" (now known to be of less frequent occurrence), "by interposing a pillow, or thick cushion, between the knees; and it is difficult to do more than this, after the patient has already been lying on his side for a considerable time: otherwise he should be placed on one of the bedsteads invented by Mr. Earle, lying on his back, with the shoulders and thighs somewhat elevated, and the latter as nearly as possible parallel to each other. This supersedes the necessity of having recourse to splints and bandages; and, with a view to the confinement of the hip-joint, is all that is required in the early stage of the disease \*."

Mr. Earle has recently recommended the following contrivance in cases of diseased hip †:—"A double inclined plane should be formed, by joining two portions of wood together in such a manner, that when the child's hams are made to correspond

\* "On some occasions, however, it is convenient to fix the pelvis by a strap or bandage, passing over it from one side of the bedstead to the other; and even the thigh may be fixed in the same manner."

† Medical Gazette, Vol. IX. p. 529.

with the angle of junction, his legs and feet should extend down one plane, and there be confined to the foot-boards by rollers, while his thighs and buttocks extend down the other. The foot-boards will also have the beneficial effect of removing the weight of the bed-clothes from the feet, which often causes much suffering from the strain it produces on the affected joint. This object will be further assisted by having a proper bed-cradle. At the extremity of the plane for the thighs, opposite the anus, a small opening should be made, to admit the passage of the fæces. The whole trunk of the child should lie perfectly horizontally on the bed; for, if propped up, or suffered to move, the ends of the bones are rubbed upon each other, which cannot be as long as he maintains the perfect horizontal posture. To facilitate the placing a bed-pan under the aperture in the plane, the flock of the bedding for some distance around should be removed, and thus a space quite ample enough to place a vessel under the plane is obtained, rendering it quite unnecessary, on the part of the nurse, to raise the frame-work. By this means, absolute and continued rest may be obtained; the parts may be kept in the most favourable and comfortable position, and the most powerful muscles become completely relaxed."

This attention to position will not be difficult in the earlier part of this stage; but in the latter part, if there be much local suffering, it will be found impracticable to fix the limb in any one position; the pelvis is tilted, the spine becomes distorted, and the body is also bent, making an obtuse angle with the hip. The diseased limb is either straight or bent, and rests on the opposite one; and attempts to get the limb straight are attended

with so much pain, that it is better to wait until the local and constitutional irritation have in some degree subsided, before any attempt of this kind be renewed.

When matter is first detected, every effort should be made to promote its absorption. With this view, the use of iodine, both externally and internally, will be found beneficial. The following is a good form for its external application. Of a solution consisting of an ounce of water, twelve to twenty-four grains of iodine, and two scruples of hydriodate of potass, a little should be applied, by means of a camel-hair brush, every day, to the region of the joint. This practice should be continued for six weeks, or two months, if required; occasionally suspending the application when the skin is very irritable. Another good form is—a drachm of the hydriodate of potass to an ounce of spermaceti ointment, of which an eighth part may be rubbed over the joint every night.

If, in spite of all our efforts, matter continues to form, and the formation is attended with great pain, it is better to suspend the local application of the iodine; to have recourse to emollient applications, as linseed meal poultices and fomentations; and to the use of opium or morphia, to allay the pain.

The matter usually is first felt over the posterior part of the joint, and then descends to the outer side of the thigh. This is the most common situation of the abscess; but there is great variation in this respect, and in the course which the matter takes. Abscesses are sometimes found in front of the joint, on the inside of the thigh, or on the back part; and in one case, admitted into the infirmary this season, the openings of the abscess were situated along the crista of the ileum, as well as at the outer part of the thigh. If *moxæ*, setons, or issues have been employed,



the abscess frequently opens on the spot where they have been applied.

The period at which the abscess should be opened, is a point on which very opposite opinions are held. Ford was very adverse to the opening of abscesses near the joint, and, at page 87, says, "Who has not seen the fatal consequences of opening abscesses of joints, and the quick transition of strumous indisposition of bone, cartilage, or ligament, from a curable to an incurable caries?"

Sir A. Cooper observes, that "with respect to the treatment of abscesses, it is right, in all diseases of joints, and especially in diseases of the hip-joint, to postpone the opening of them as long as you can: unless the abscess is exceedingly large, it is best not to open it at all. The reason of this is, that, if you open the abscess early, you expose the cavity of the joint to irritation; whereas, if you delay the opening of it, you suffer the abscess to make its passage to a considerable distance from the joint, so that the opening of it will not be liable to excite much irritation in the cavity of the joint. The irritation will be very slight, if you delay the opening; but if you make it early, the effect will be just the same as if you were to make an incision into the joint. Give time for Nature to perform her task, and to fill the joint itself with adhesive matter, as the abscess extends down the limb to a great distance from the joint. I have made up my mind most decidedly upon this point, having, again and again, had an opportunity of contrasting both modes of practice\*."

Moreover, if an opening is made early, the matter will probably gravitate below the opening, and thus a second opening will be rendered necessary.

\* Lancet, Vol. I.

Generally speaking, perhaps, the opening of the abscess may be delayed until the skin is about to give way at a particular spot; and then a puncture may be made at that spot, leaving the evacuation of the matter to itself, and using no efforts to empty it.

In strumous habits, after the abscess has been opened, the wound enlarges, and the skin usually ulcerates in several places. These ulcerations are with difficulty healed, and, even when that occurs, they soon break out again, or similar ulcerations occur in the neighbourhood.

The best application to the ulcerated openings of the abscesses, and that used at the infirmary, is tow or charpie, soddened in a solution of hydriodate of potass and iodine. These are to be changed every day, or oftener, if the discharge is very copious. The appearance of the sores, from the use of this application, is generally very healthy.

Sometimes, however, the constitution is affected by the absorption of the iodine, or the sores take on an indolent, ash-coloured, glossy appearance; and, in either of these cases, some stimulating wash, as that of the nitrate of silver, or sulphate of copper, had better be substituted, and some mild ointment be applied to the sore. Salt water was formerly applied to the sores at the infirmary, and usually agreed very well.

Iodine has been very extensively used, during the last three years, at the infirmary, and the formulæ\* employed are those

\* The following formulæ are taken from Lugol:—The following solution is graduated in three different proportions, so that the iodine may be given internally in the progressive dose of half a grain, three-fourths of a grain, or four-fifths of a grain daily.

recommended by Lugol; varying the strength according to circumstances. Latterly, Dr. Canham, one of the physicians to the

#### IODURETED MINERAL WATER.

	NO. 1.	NO. 2.	NO. 3.
Rx. Iodine . . . . .	gr. $\frac{3}{4}$	gr. j.	gr. $j\frac{1}{4}$
Hydriodate of potash .	gr. jss.	gr. ij.	gr. ijss.
Distilled water . . .	$\bar{3}$ viii.	$\bar{3}$ viii.	$\bar{3}$ viii.

This solution is perfectly transparent, of a beautiful orange colour, and keeps for a considerable time. Children drink it readily when mixed with a little sugar, but this addition should only be made at the moment of the administration of the medicine, as, in the course of a few hours after sugar is added, decomposition takes place, the liquid becomes colourless, and its activity is partly destroyed. I commence the internal treatment with half a grain of iodine; for this proportion I prescribe two-thirds of the mineral water, No. 1. In the second fortnight I give the entire of this number, that is, three-fourths of a grain daily, varying the dose within narrow limits according to the peculiarities of the case. During the fourth fortnight, or in the beginning of the fifth, I give a grain daily, and usually I continue this quantity to the end of the treatment. In some cases I have prescribed one grain and a quarter; still more rarely I have increased the dose to a grain and a half, but I have never gone beyond this quantity daily.

Another and advantageous form of preparing this mineral water on a larger scale is, by first making a concentrated solution of iodine in hydriodate of potash, and then diluting it with a sufficient proportion of water. Thus :—

Rx. Iodine . . . . .	℥ j.
Hydriodate of potash	℥ ij.
Distilled water . . .	$\bar{3}$ vij.

This solution contains one twenty-fourth of iodine; poured into sixteen pounds of distilled water, it forms thirty-two bottles of eight ounces of the mineral water, No. 1. It is easy to understand that, by diminishing the distilled water one-fourth, we compose No. 2; and by using three-fifths of the quantity of water, we obtain No. 3.

Again, the concentrated solution now used serves for the administration of the remedy in drops once or twice daily, a mode of prescribing I frequently follow in my private practice. I commence by six drops given in the morning fasting, and six in the afternoon an hour before dinner, in half a glass of water flavoured with sugar. Every week the daily dose is increased by two drops, until it shall have reached thirty, or even thirty-six drops daily.

For children under seven years old I would recommend two drops twice daily for the commencement, to be increased gradually to five drops twice a-day, morning and evening.

infirmary, informs me that the use of this remedy has been more confined to its external application than at an earlier period of its use ; as in many cases its absorption has been rapid, and constitutional effects have been soon produced, in which case the internal administration of it has been suspended. Patients are met with, occasionally, who will not bear the external application of iodine in any form, even for a short time, without its producing constitutional effects ; the symptoms of which are generally an increased

From seven to fourteen years of age I seldom order more than sixteen drops daily ; I should not deem it prudent to exceed that quantity.

I cannot point out more particularly the graduation of the doses according to the age of the patients. The ordinary laws of therapeutics must guide us in this respect. It will not be forgotten that childhood, youth, and adolescence, are severally marked by different periods, according to which the treatment of diseases must undergo modification.

## 2. OINTMENT OF THE PROTO-IODURET OF MERCURY.

The following formulæ express the quantities of the ingredients in the several strengths of the ointment which I am in the habit of prescribing :—

	NO. 1.	NO. 2.	NO. 3.
Rx. Proto-ioduret of mercury	℥ ii.	℥ iii.	℥ iv.
Fresh lard . . . .	℥ ii.	℥ ii.	℥ ii.

This ointment is, when properly prepared, of a canary-yellow colour ; sometimes it presents a dead green tint, which is owing to the presence of some protoxide of the metal. At other times its colour approaches to the orange, from the deuto-ioduret being formed. The latter admixture must be carefully avoided, the deuto-ioduret of mercury being nearly as escharotic a preparation as the deuto-chloruret or corrosive sublimate.

## IODURETED LOTIONS.

	NO. 1.	NO. 2.	NO. 3.
Rx. Iodine . . . . .	gr. ij.	gr. iij.	gr. iv.
Hydriodate of potash	gr. iv.	gr. vj.	gr. viii.
Distilled water . .	lb. j.	lb. j.	lb. j.

These injections should be used in fistulous tracts. The remedy is here doubly valuable, by coming in contact with the diseased surfaces, and by affording us a means of tracing the course and extent of the fistulæ with more certainty than we can obtain by probes or other instrumental examinations.



velocity of pulse, very foul tongue, head-ach, pains in the back and limbs, thirst, loss of appetite, and the general symptoms of pyrexia.

Manson mentions four cases of disease in the hip, in which the tincture of iodine was employed as the chief remedy; and this author is an advocate for its exhibition in the early stage\*.

Lugol also relates three cases of diseased hip, in which the fistulous canals were injected with the iodureted solution, in addition to the application of the proto-iodurets of mercury to the sore.

In this stage of the disease, anodynes must be given to allay the pain: morphia or opium, particularly in weak and irritable constitutions, and when there is much pain and restlessness, or when diarrhoea comes on, is indispensable.

When there is great depression of all powers, nourishing diet, wine and bark, or quinine, must be given.

During the discharge, hemorrhage occasionally takes place from the fistulous openings of the abscess, so as greatly to reduce strength, and sometimes to endanger life.

After the abscess discharges, bathing and very gentle exercise may be employed, if no carious bone is coming away, and there is little local suffering.

If, as observed by Abernethy, there is absorption of the head and neck of the thigh-bone, retraction of the limb, and abscesses formed and broken, there is a most important thing to be done; namely, to get the limb into its right situation; that is, descending

\* Vide Medical Researches on the Effect of Iodine. By A. Manson, M.D.

perpendicularly from the pelvis, with the toe neither turning in nor out; so that, when healthy action returns, and ankylosis takes place, it may take place so that the weight of the body will have a proper bearing on the limb; for a limb is of no use if it ankylose to the pelvis at a right angle. If it is properly done, and should afterwards be shorter, then we have only to supply the shortness with a cork shoe.

On this subject Brodie says, "At a later period, when, in consequence of the extensive destruction of the articulation, the muscles begin to cause a shortening or retraction of the limb, I have found great advantage to arise from the constant application of a moderate extending force operating in such a manner as to counteract the action of the muscles. For this purpose an upright piece of wood may be fixed to the foot of the bedstead, opposite to the diseased limb, having a pulley at the upper part. A bandage may be placed round the thigh above the condyle, with a cord attached to it, passing over the pulley, and supporting a small weight at its other extremity. I will not say that the effect of such a contrivance is to prevent the shortening of the limb altogether; but I am satisfied that it will, in a number of instances, render it less than it would have been otherwise, at the same time preventing, or very much diminishing, that excessive aggravation of the patient's sufferings with which the shortening of the limb is usually accompanied."

Dr. Ducros, junior, appears to have reduced a spontaneous luxation of the femur forwards on the horizontal ramus of the pubes, which occurred in a female, aged 27, labouring under inflammation of the hip-joint. Permanent extension and counter-exten-

sion were kept up steadily for fifty days, and the patient, it is said, was then found completely relieved, not only of the danger of luxation, but also of the inflammation of the joint. At present, the patient walks freely, and every thing about her proves a complete cure\*.

The removal of the head of the bone has been recommended in this disease, where the acetabulum is supposed not to be affected. Mr. White successfully removed the head of a femur from a carious joint, and the same operation has been performed by Mr. Hewson. Mr. H.'s patient survived the operation three months, when he declined, owing to excessive and large purulent collections, which were found to extend into the pelvis, through an opening in the cotyloid cavity†.

In case of ankylosis of the hip-joint from accident or disease, when the thigh is at right angles to the body, it has been proposed to saw through the femur near to the trochanter major, and to form a new joint. Dr. Barton, of Philadelphia, has related a case‡ of ankylosis of the hip, in which the formation of an artificial joint was accomplished by sawing through the greater trochanter, and part of the neck of the femur, afterwards extending the limb, and allowing the several parts to unite by ligament. The precise nature of the injury which led to the ankylosis of the joint does not appear, but the patient had fallen from the hatchway of a ship into the hold. The following is an account of his condition about seven months after the accident.

\* Gaz. des Hospitaux ; June 30, 1835.

† Hargrave's Operative Surgery, page 514.

‡ North American Surgical Journal.

“ He was supported by crutches, having the thigh drawn up nearly to a right angle with the axis of the pelvis, and the knee turned inward and projecting over the sound thigh ; so that the outside of the foot presented forward. There was considerable enlargement round the hip, which so much obscured the case, even at this date, as to prevent me from forming any positive opinion as to the real nature of the original injury. From the fixed and immovable condition of the limb, it was impossible to ascertain whether, in a straight position, there would be shortening ; and, if any, to what extent.” At the end of little more than three months after the operation, the patient regained every motion of the limb which he originally possessed.

The subsequent management of the limb must be a subject of great care. Ford mentions an instance of caries in the hip-joint, which, after eighteen years’ continuance, proved fatal, from the patient’s irregularity of living, and from his laying aside his crutches before an anchylosis was perfectly formed.

Great care must likewise be exercised for many years after, to avoid jolting the limb.

The occupations which patients who have suffered from disease of the hip should subsequently follow, is a subject of great importance.

Any business that requires great exertion of the joint, as long walks, long standing, peculiar positions, severe concussions, or great confinement, so as to endanger the general health, is injurious.

It is, for instance, almost impossible for a person who has suffered from this disease to follow the business of a tailor ; or, at least, he cannot bring the legs into the position which tailors



use, viz., that of resting each knee on the ball of the opposite foot.

The business of a shoemaker, on account of the concussions it requires, is not less objectionable. To these, the man so frequently attacked by this disease, and now in the infirmary, may have owed its return.

## APPENDIX.

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### SINGULAR CASE OF SECONDARY LUXATION.

IN speaking of external violence as a cause of disease of the hip, I accidentally omitted to mention the following case of injury of the hip-joint, and secondary luxation in the ischiatic notch, which occurred to Mr. Travers in St. Thomas's Hospital. It is related in the 11th vol. of the Medical Gazette by Mr. Ward.

Michael Flemming, æt. forty, a tall but not very muscular man, a shoemaker, was admitted September 27th, having received an injury to the hip-joint from a fall. On admission he stated that, while walking on the pavement a month before, he slipped from the curb-stone, and fell with the whole weight of his body on the left hip, which part, he thinks, struck against the edge of the stone. On attempting to rise, he again fell and struck his knee. He was taken to Guy's Hospital, but, neither fracture nor dislocation being made out, he was dismissed. After this he obtained admission into St. George's Workhouse as a pauper, where he was again carefully examined by the parish surgeon, but with the same result. He remained there a month, suffering very severe pains at times ; kept his bed, and had the parts fomented frequently. He also states that the day after the accident he could perceive that the left leg was a little

shorter than the right ; he could, however, bring the foot to rest on the ground, when in the erect posture, by holding anything to support him, though he could not bear the weight of his body on that leg, nor advance it before the other. He continued to suffer pain in the hip all the time he was in the workhouse.

He was seen on the day of admission by Mr. Travers, who examined him standing and lying down. Both legs were exactly of the same length, the left knee a little more advanced than the right. No alteration could be observed in the appearance of the hip-joint, and the contour of the buttocks was uniform. He could not raise the left thigh from the bed without the assistance of his hands. When standing erect, he brought the foot and heel to the ground, but could not bear any weight on it, nor advance it before the other ; he had a constant pain in the hip, extending down the thigh to the knee.

Directed to remain quiet in bed, and apply a large blister over the hip-joint.

The following week he still complained of pain ; the blister was therefore repeated, and with considerable relief.

A third blister was applied to the outer side of the thigh. On Thursday, November 15th, the man's lameness continuing, Mr. Travers again examined the limb, and was much surprised by the following appearances :—The injured thigh was found more than an inch shorter than the other one ; the knee raised and inverted ; the foot also turned in ; the great trochanter forming a remarkable prominence on the outer and back part of the gluteal region. Rotation outwards caused considerable pain, and the head of the bone could be distinctly felt to strike against the part on which it rested. The thigh could be carried backwards and outwards to some extent, but not inwards or forwards.

The nature of the injury, as it now existed, was very evident ; and, although a period exceeding three months from the time of the accident had elapsed, Mr. T. determined to attempt the reduction. He was therefore taken into the operating theatre, and placed on a table on his right side, a padded girth

passed so as to fix the pelvis, which was then made secure by a cord to a fixed point; a linen roller applied round the thigh, and the padded strap buckled round above the knee, to which the pulleys were attached. Extension was then made across the lower part of the right thigh for twenty minutes, without any change being produced. A vein in the arm was opened, and thirty ounces of blood taken. The extension was kept up, and doses of tartarized antimony administered for a considerable time, but neither sickness nor syncope induced. During the extension the leg was rotated, and an assistant endeavoured to raise the bone by means of a round torsel passed over his shoulders and under the upper part of the patient's thigh. The process was continued for nearly an hour. By passing the fingers from the trochanter along the neck of the bone the round head could be partially felt, deeply and firmly fixed in its position.

All means having failed to replace the bone, he was removed to bed, for Nature to complete that which no doubt she had already commenced—namely, the formation of a new acetabulum.

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#### OBSERVATIONS ON THE PRECEDING CASE, BY MR. TRAVERS.

The above case is accurately stated by my friend and former dresser, Mr. Ward, who was with me at the first and subsequent examinations. I can explain it only by supposing one of the two primary accidents:—1. The laceration of the teres and capsular ligaments;—2. The comminuted fracture of the acetabulum on its ileo-ischiatic side.

I know that a dislocation may, from hurry or insufficient care, be overlooked or mistaken; but this was not the case, as will be concluded from the facts in the narrative. Secondary luxations arise from such casualties as those above mentioned, and also from destruction of the parts forming the articulation, by



the inflammatory, i. e. ulcerative process. The last is so marked and so slow a process as to be inadmissible in the present case as a mode of explanation. Its frequency makes surgeons sufficiently familiar with it. Unreduced luxations are generally viewed as opprobrious to the surgeons who have been called to them; but a case like the preceding would be very uncharitably, or rather unjustly, made the subject of a reproachful comment. It is on this account that its publication is important, and that I avail myself of the opportunity of adding a remark or two.

At the end of a month from the accident, I undertake to say positively no recognizable luxation existed; yet there was lameness and pain in the joint and its extended motions, which led me to suppose it the seat of ligamentous inflammation from the concussion, and to blister it freely. The signs of synovial inflammation, or "*morbus coxæ*" in its first stage, were not present, and the health was not disturbed. It is now a dislocation so palpable as not to admit of a doubt; and the question is, how and when the bone became luxated in the interval between the end of September and the 15th of November? If the preliminaries to dislocation (as the tearing through of ligaments, or a breach of the wall of the acetabulum) had taken place at the moment of the injury, the head of the femur might afterwards so easily be displaced, as that its actual escape might be unperceived.

The ulceration of the lacerated capsule, the separation, perhaps an extraneous attachment, of an insulated fragment of the wall of the acetabulum, might either of them be accomplished in this interval without any general or diffused inflammation of the joint.

Sub-luxations take place in the shoulders and hip-joints from injury as well as from disease. Their signs are necessarily, like the displacement, partial and imperfect. As the process of absorption advances, the head of the bone gradually passes on, and then over the border of the receiving cavity, and imperceptibly the semi-luxation becomes total. In the ginglymoid joints, e. g. knee and elbow, though the semi-luxation is yet more frequent, the injury seldom proceeds the length of complete displacement, owing to the dif-

ferent disposition of the articular surfaces, as compared with the ball and socket joints.

Two circumstances noted in this case serve to confirm the belief that the injury of the ligamentous or bony structure predisposed to the luxation: 1st, the unremitting pain from the time of the accident, and its material relief by the repetition of blisters; 2nd, the notorious shortening, disfiguration, and increased lameness, observed at the end of seven weeks from the patient's admission, which led to the discovery of the complete dislocation.







Fig 1

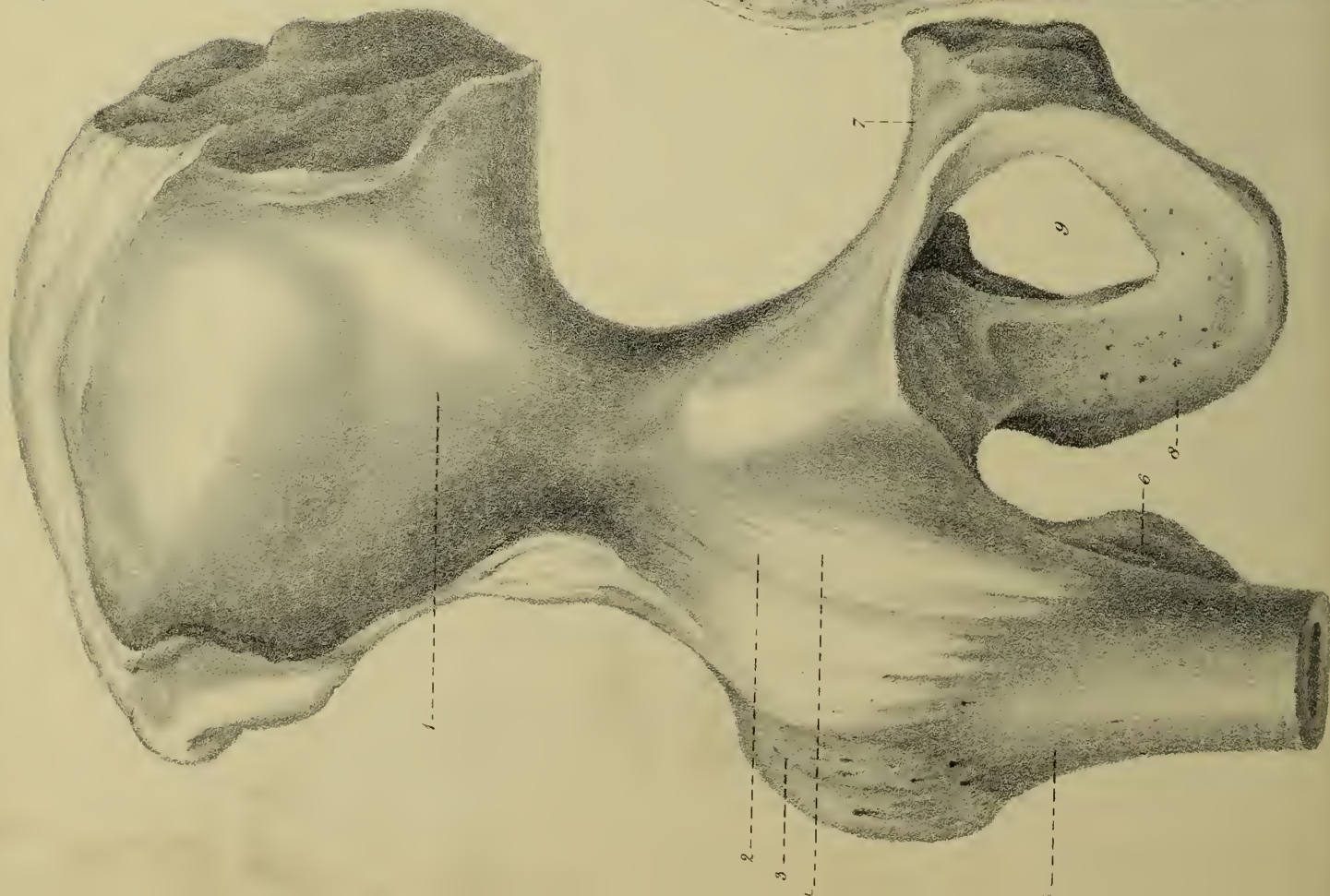
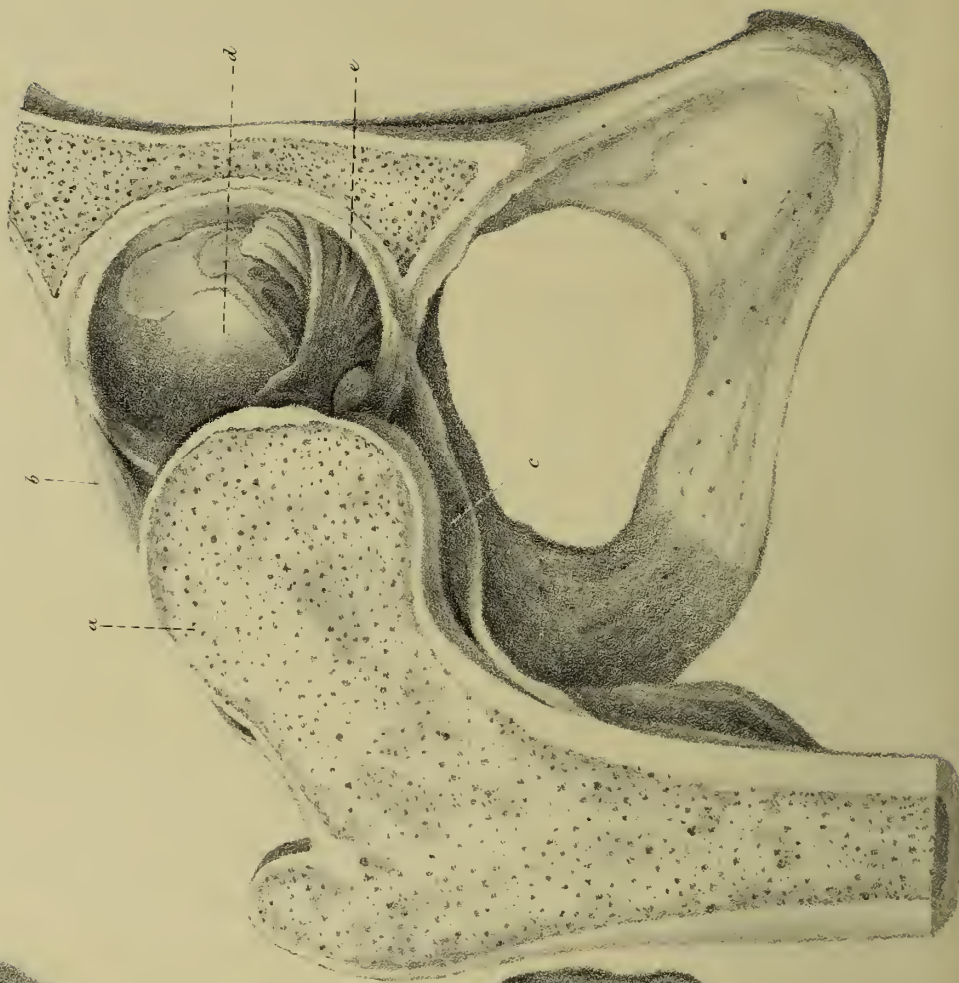


Fig 2



## DESCRIPTION OF THE PLATES.

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### PLATE I.

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The drawings in this Plate are not copied from any work, but made from nature.

Fig. I. represents an os innominatum, and a portion of the femur, with the capsular ligament. The preparation had been macerating for some days: hence the pale appearance of the ligament.

1. The ileum.
2. Capsular ligament.
3. Trochanter major.
4. Ileo-femoral ligament, consisting merely of some additional fibres of the capsular ligament, proceeding from the spinous process of the ileum towards the trochanter minor.
5. Os femoris.
6. Trochanter minor.
7. Os pubes.
8. Os ischium.
9. Foramen ovale.

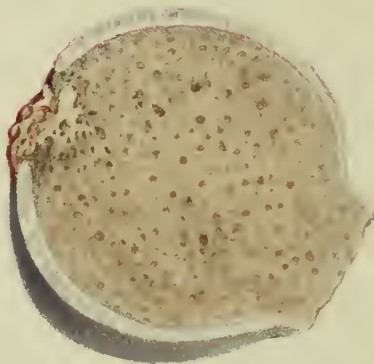
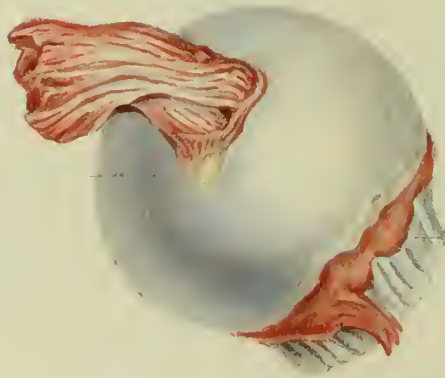
Fig. II. A section of the os innominatum and femur. The principal point intended to be shown is the distance to which the head of the bone can be removed from the acetabulum, the round ligament being entire. The distance is about an inch and a line.

- a.* Section of the femur.
- b.* Capsular ligament.
- c.* Synovial membrane.
- d.* Cavity of the acetabulum.
- e.* Round ligament.









## PLATE II.

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This represents the head of the femur taken from Mr. Key's patient, whose case is related at page 29. The specimen was not injected.

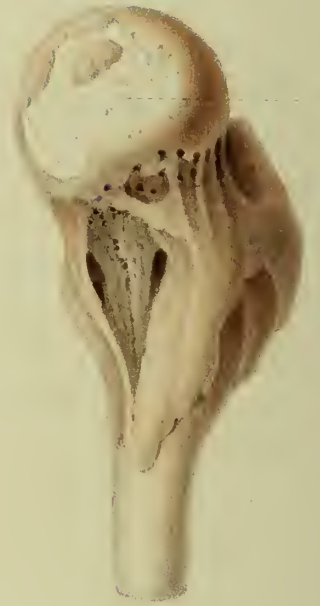
- a.* The round ligament in a state of high inflammation.
  - b.* An ulcerated spot on the cartilage.
  - c.* Inflamed synovial membrane, ulceration of the cartilage commencing just at the point where the membrane is reflected on the cartilage.
- 

*The preparation is in the Museum of Guy's Hospital.*









### PLATE III.

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This plate represents the specimen taken from the child whose case is related at p. 34.

*a.* Ulceration of the cartilage of the head of the femur, at the upper part of which a remnant of the attachment of the round ligament is seen.

*b.* Reflected capsular ligament, and synovial membrane, with frimbriæ of the latter extending to ulcerated spots in the cartilage.

*c.* Synovial membrane inflamed.

*d.* Margin of the acetabulum, presenting a serrated appearance, the effect of ulceration.

*e.* A purulent secretion from the synovial membrane, which nearly filled the acetabulum; beneath this the acetabulum was not diseased.

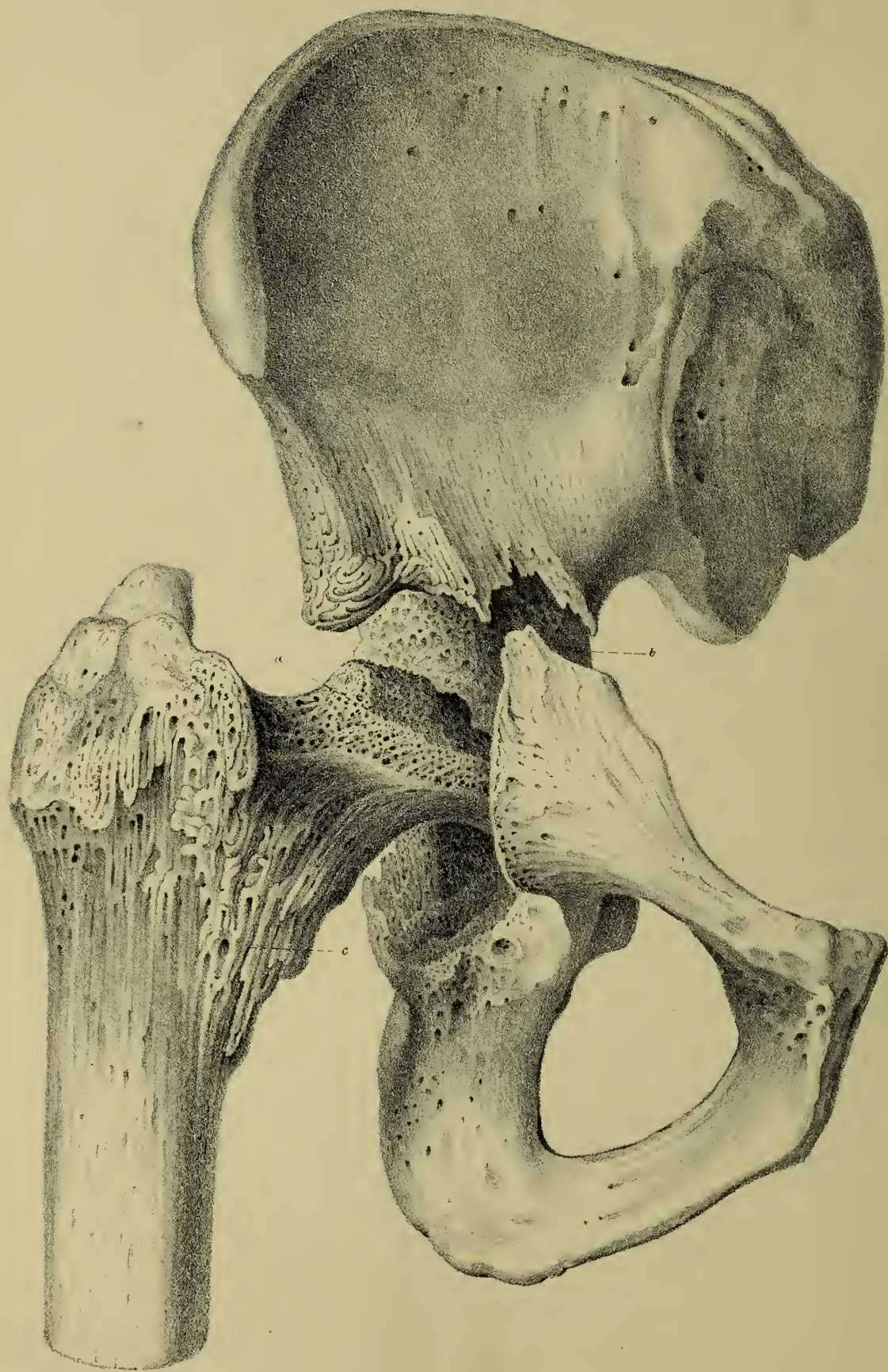
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*The preparation is in my possession.*









## PLATE IV.

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Front view of right os innominatum and the femur.

Head of latter almost entirely destroyed, irregular, and somewhat conical; considerable new deposit external to attachment of capsular ligament, and also along the linea aspera. Bottom of acetabulum gone, and margins deficient.

Ossa pubis and ischii almost detached from ileum.

The patient, a male, æt. 25, received a kick from a horse behind the trochanter major; but he had pains in the joint previous to the accident—great pain in the groin, increased by pressure—limb much shortened—toes everted—an extensive abscess formed on inside of thigh, from which two pints and a half of pus were discharged. Profuse fetid discharge continued from the wound; colliquative diarrhœa and sweating occurred, attended with hectic, and the patient at last sunk. The disease was of eighteen months' duration.

a. Remaining neck of femur.

b. Separation of pubes from ileum, and opening into the pelvis.

c. Osseous deposit external to capsule.

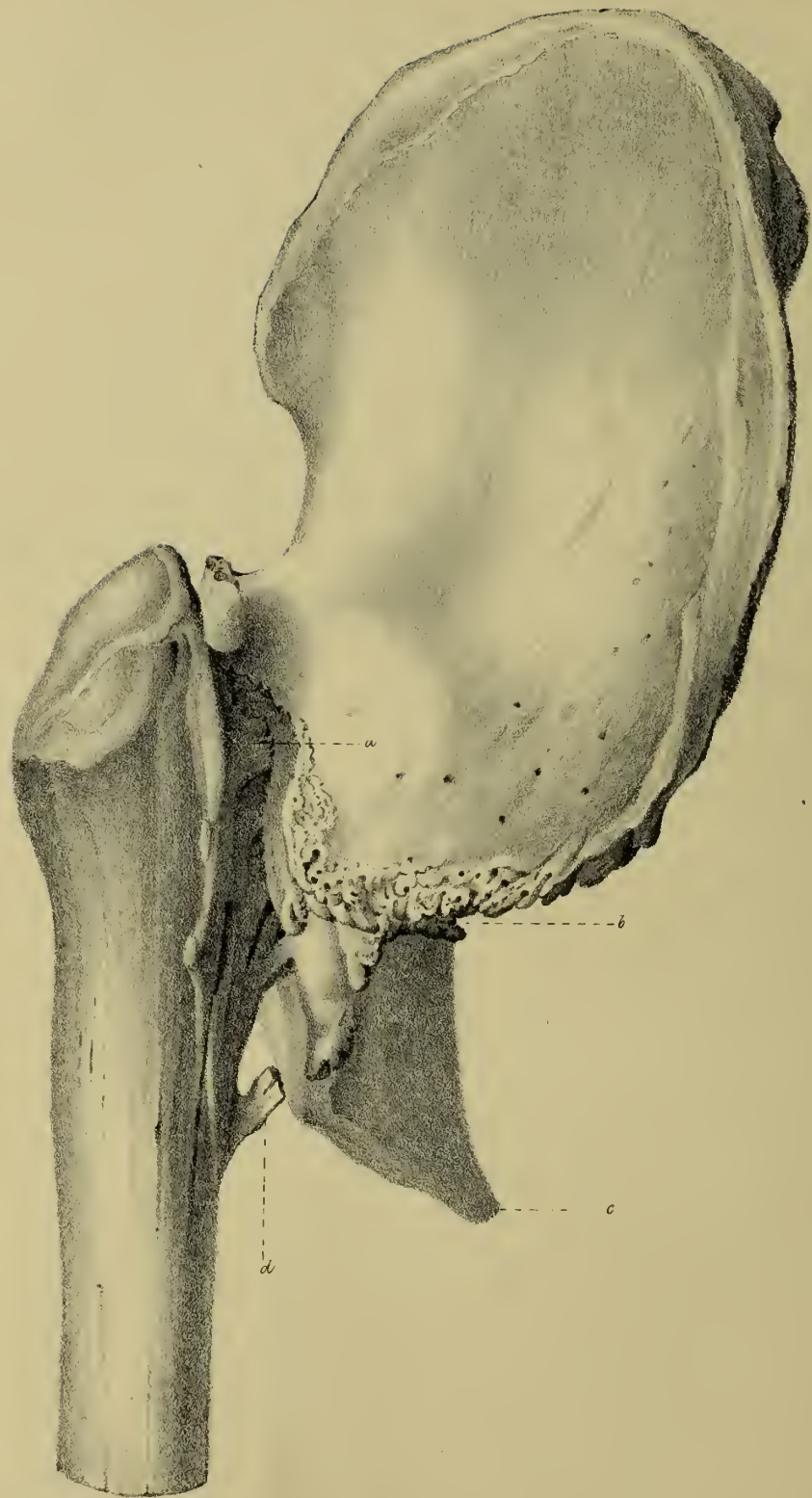
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*The preparations illustrative of Plates IV. V. and VI. are in Mr. Liston's collection.*











## PLATE V.

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Lateral view of an ankylosis of the right femur with the os innominatum.

The neck of the femur seems to terminate in, and be continuous with, the acetabulum, all appearance of which is completely effaced. Much deposition of new osseous matter on the inner surface of os ileum, and on the inner surface of femur, immediately below the ankylosed joint. This was taken from a patient in whom the disease commenced at the advanced age of sixty-four. He lived some years after.

- a.* Shows the junction of the femur with the acetabulum.
- b.* The obliteration of the anterior spinous processes, with osseous deposits.
- c.* A portion of the pubes.
- d.* Spicula of bone in the region of the trochanter minor.







## PLATE VI.

---

Posterior view of a left dislocated femur from disease with the os innominatum.

This specimen was taken from a patient twenty years of age, who had laboured under the disease two years.

The limb was considerably shortened, and there were large abscesses in the region of the joint, from the discharge of which the patient sank. The head of the bone is diminished in size, deprived of cartilage, and of irregular shape, and lies on the dorsum of the ileum.

- a.* Head of the femur diminished in size.
- b.* The mark on the ileum where the head of the bone was lodged.
- c.* A remnant of the capsular ligament.



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